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ABSTRACT

Use of radio for nonformal education and development communications and the technical and economic considerations related to radio services are covered in this second volume of case studies on use of radio for education and development. Under radio and nonformal education are: an evaluation of radio schools as part of the popular promotion strategy of rural development in Honduras (focusing on adult basic education--literacy, health, arithmetic, agriculture--leadership training, and community organization); a report on harnessing radio to mass educational campaigns in Tanzania from first efforts to the massive health education campaign in 1973 (based on a radio series, supporting printed materials, organized radio study groups); a description of a pilot project in Senegal coupling rural educational radio programs to community listening and feedback; an explanation of three paradigms for open broadcast educational radio (top-down and bottom-up communication and a synthesis of the two); and guidelines for radio forums as a rural development strategy. Under radio for development communications are case studies on community use of radio in the Canadian North and interactive radio for health care and education in Alaska. A final section covers technical and economic considerations that should go into planning radio services in order to attain development goals. (RS)

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Radio for Education and Development: Case Studies

Volume II

World Bank Staff Working Paper No. 266

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CHAPTER VII

MASS COMMUNICATIONS AND THE POPULAR PROMOTION STRATEGY OF RURAL DEVELOPMENT IN HONDURAS*

Robert A. White

AN OVERVIEW OF THIS CHAPTER

Many of the programs of adult basic education, agricultural extension, and improved health services attempting to reach rural, lower-status populations in Latin America have encountered serious obstacles in the geographical isolation of mountainous terrain, the lack of professional personnel willing to work in backward areas, and the social gaps between the urban-technical and marginal groups. It has become increasingly obvious that new approaches must be developed using mass communications, paraprofessional personnel, special educational methods, and new styles of local leadership if rural sectors are to have access to the available alternatives of education, health, agricultural productivity, and political participation. 1/ Among the recent innovative strategies of rural development which have combined the use of mass communication and rural organization to overcome geographical and social barriers are the systems of Popular Cultural Action and Popular Promotion now found throughout Latin America.

Some of the better known models of these methods are Popular Cultural Action of Radio Sutatenza in Colombia (ACPO) which, in 1947, initiated a national system of adult basic education through radio schools, 2/ and MEB (Movimiento de Educacao Basica) in Brazil which adapted for radio schools the psychosocial or concientization method of Paulo Freire. 3/ Another influence has been the applied research institute, DESAL, in Santiago, Chile, which popularized the marginality diagnosis of Latin American society and elaborated the Popular Promotion model stressing the importance of local organizations as a channel for services and a base for representing campesino interest. 4/

Although these models or the programs influenced by them vary in their emphasis, generally they have attempted to integrate adult basic education through radio schools with a system of leadership training and community organization which is intended to serve, at least

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* The present chapter represents a summary of a fuller report published under the same title by the Institute for Communication Research, Stanford University, Stanford, California.

indirectly, as the basis for rural interest-group formation. The learning of specific skills such as literacy is seen not as an objective in itself, but as the medium through which there is created an awareness of community problems or social and political injustices that are assumed to be the real factors in underdevelopment. The general objective is also frequently described as desarrollo intergral, integral development, an emphasis on balanced growth which takes into consideration all major dimensions of the human personality: social, economic, religious, cultural, and political.

The programs of the Honduran agencies now associated as CONCORDE (The Coordinating Council for Development) offer an interesting case study of this approach in rural development in that, over fifteen years from 1960 to 1975, they have incorporated most of the major aspects of Popular Promotion into a campesino-based movement which, in this chapter, I will refer to as the Popular Promotion Movement or PPM. In 1960 the ACPO system of radio schools was introduced and this, in turn, was used as the basis for a network of grassroots organizations--community development councils, cooperatives, centers for agricultural services, and rural homemakers' clubs--following the Popular Promotion model of DESAL. The philosophy and educational methods of Freire were adopted by the PPM in 1969, and the PPM became an ideological and organizational support for aggressive campesino leagues and land occupations. Programs of credit, regional market and supply cooperatives, and agricultural technical assistance for the highland semi-subsistence farmer were added in 1971. Finally, in 1972, the series of agencies that had grown up around the PPM established a formal structure of coordination, CONCORDE, to provide a complete range of rural services: Popular Cultural Action of Honduras (ACPH), working in adult basic education and agricultural education; the Honduran Development Foundation (FUNHDESA), providing credit; the Honduran Federation of Credit Union Cooperatives (FACACH); CARITAS of Honduras, supervising more than one thousan homemakers' clubs; six regional leadership training centers, and four cultural and educational radio stations.* By 1975, more than 100,000 rural families in Honduras, approximately 20 to 25 percent of the rural population, 5 were taking advantage of one or other of the services provided by the CONCORDE agencies, and the rural movement supported by CONCORDE, the PPM, was beginning to represent a significant factor in rural development efforts in Honduras.

This evaluation of the PPM was conducted as part of a larger study of regional development in southern Honduras where the PPM has been particularly active and included research on campesino leagues and land occupations, rural municipal government, and community power structure. 6/ The analysis of the Popular Promotion strategy presented in this chapter has been limited to two major aspects of the Honduran case, the adult basic education program or radio schools and the efforts in "concientization" and development of organizational capacity from 1961 to 1971.

The first question guiding this analysis is basic to any evaluation:

1. Has the PPM in Honduras been effective in achieving the immediate objectives of communicating skills in literacy, health, and agriculture, in concientization, and in organizational capacity?

However, I have been interested also in a further question, sometimes overlooked by evaluators:

2. If these skills or other behavioral changes have occurred as a result of the efforts of the PPM, are they relevant or functional in the daily life of the campesino or would some other emphasis have been of greater value?

Finally, given the broad, long-range objectives of the PPM and the supporting CONCORDE agencies in Honduras, I have posed a third question:

3. What are the innovations of the PPM in rural development strategies and what is the actual or potential contribution of the PPM to development among rural, lower-status groups in Honduras?

The PPM has been part of a larger process of social change in Honduras, and to understand the outcomes of the PPM efforts in Honduras fully it has been necessary to include as part of the evaluation design not only the explicit objectives of the PPM but variables that express the long-standing institutions of social power and leadership in rural communities and the parallel processes of modernization accompanying or at odds with the PPM. Nor was the rural development strategy that leaders of the PPM were voicing in 1972 the concept they originally had in 1961, and the objectives that are to be evaluated can be understood only in terms of the sometimes painful evolution of the PPM and CONCORDE over ten to fifteen years. This background on the dynamics of social change and development in rural areas provides criteria for a discussion, in the conclusions, of the contribution of the PPM to rural development in Honduras.

In Part 1 I will briefly describe: 1) the traditional bases of power and rural-urban linkages in rural communities; 2) the deteriorating socio-economic situation of the semi-subsistence farmer with the onset of modernization in Honduras after 1950; 3) the evolution of the strategy and objectives of the PPM in Honduras from 1960 to 1972; and 4) the definition of these factors in terms of operational indicators and a brief account of how the data were collected.

Part 2 takes up three aspects of the adult education program - literacy, agriculture, and health--in the light of the first two questions posed above: the accomplishment of immediate objectives and the relevance of these objectives in the life of the campesino participants in the PPM.

In Part 3 I will examine the second major aspect of the PPM, concientization leading to organization capacity and political efficacy, again in terms of the two basic questions.

In the conclusions, it will be possible to return to the third question, the actual or potential contribution of the popular promotion strategy toward development among the semi-subsistence highland campesino.

1. SOCIAL CHANGE AND THE ORIGINS OF THE POPULAR PROMOTION STRATEGY OF RURAL DEVELOPMENT IN HONDURAS

1.1 The Traditional Bases of Power and Rural-Urban Linkages in the Rural Sector of Honduras

When the radio schools and other activities of the PPM began to spread into rural communities in 1961, they encountered a traditional hierarchical social structure dichotomized in terms of a literate, urban-oriented, technically trained elite--including the rural elites--who were culturally defined as "rulers" and the lower-status, largely rural population culturally defined as inherently inferior, not interested in improving their lot, incapable of participating in the "ruling" of the country, and not needing education. Communication between the urban-technical and campesino sectors was through a hierarchy of intermediaries--large landowners, the clergy, politicians, merchants, and government bureaucrats--who translated the information and norms of the urban-technical sector down to the campesino sector in ever descending degrees of complexity so that the compesino shared the same cultural themes, but with far less information. In many respects this hierarchical control system reached its apogee from 1932 to 1949 during the long, paternalistic dictatorship of General Carias who tied local caudillos into the Nationalist Party's system of neighborhood, municipal, and regional bosses, all tightly "disciplined" at the top by the Party elite.

Nevertheless, Honduras did not experience the extreme concentration of power and prestige typical of the centers of culture in Guatemala and El Salvador, in part because it consisted of a series of gold and silver camps beyond the frontier in the colonial period and, although there were large cattle herders in the upland valleys and southern coastal plains, a powerful landed aristocracy based on coffee

and other intensive export crops never developed. 8/ Until 1950, Honduras continued to be a series of relatively isolated regions, and the rural elites lived close to their land, often not socially distinct from the neighboring semi-subsistence farmers. 9/ Without credit and access to markets, even large land holdings had a largely subsistence value, and a kind of distributive, precapitalistic economy existed. 10/

In the rural community, the basis of social power--the capacity to obtain the compliance of others through the control of strategic resources 11/ --has been land ownership. Usually, the family that arrived first in a mountain valley has had an economic surplus with which to build a capital base and, by offering to the increasingly landless families employment, land for rent, loans, or even outright gifts in times of poor harvests or sickness, has surrounded itself with dependency relationships.

The more direct form of social power in rural communities, however, is centrality in the internal pattern of communications. The dominant personality of the "leading family" (or families) became the patriarchal patron of the community: the preferred compadre in baptisms, the counselor and support in court of younger men in scrapes with the law or with political bosses, helping poorer relatives in economic crises, and the center of collective decision making in the community. Traditionally there have been essentially two types of formal leadership in rural communities: the local representative of the political party, who mobilized support locally and was rewarded as the channel of patronage and with municipal offices; and the patrons of religious fiestas, leaders in the prayer meetings that accompanied the rituals surrounding deaths and the devotions to the saints. These formal positions have generally been occupied by individuals in the leading families.

These patrons have also been more likely to have contact with the political hierarchy, hold offices in the local municipal government, serve as local organizers for the Catholic pastor in visits to the community, and know the more important merchants in the area. They tend to serve as the intermediaries between the community and the communication hierarchy which links the urban-technical centers of the country with rural areas. Since these dominant community figures frequently have been the market-oriented, middle-range farmers, they tend to have much more contact with the market town of the region.

To summarize, land ownership has been a base of social power in rural communities determining the opportunity structure, including the opportunity to be literate, and to adapt to new agricultural and health practices. However, even more important as a basis of social power and opportunity in rural communities is the centrality of individuals in the internal communication network and centrality of access

to external linkages with the hierarchical communication work of the larger regional and national system.

1.2 Modernization and the Deteriorating Position of the Semi-Subsistence Farmer

The end of the Carias regime in 1949 coincided with the entry into Honduras of a series of international missions--the International Monetary Fund, the United Nations FAO and UNESCO agencies, and the United States' Point IV programs--to develop the service ministries of a modern national government. A central bank and a development bank provided the basis of an expanding, stable financial and monetary system; a U.S. model agricultural extension system as well as centralized health and education ministries were introduced; agencies for building a network of roads connecting municipal towns to regional cities were established; and a series of professional schools or university faculties was opened to provide trained personnel for the new government bureaucracies. This creation of a modern financial, service, and educational system began to have a series of direct effects on the social and economic structure of the country after 1950:

1. With credit and technical assistance now available, larger land-holders oriented toward commercial markets could bring unused land into production to take advantage of the expanding world markets for coffee, cotton, and fresh meat during the Korean conflict era.

2. The creation of the government bureaucracies and supporting service industries fostered the rapid growth of urban populations in Tegucigalpa and other Central American cities and, therefore, a deeper domestic market for agricultural products.

3. The building of a Honduran and Central American road system opened these new domestic markets to outlying agricultural production areas.

In the minds of the foreign advisors and the Hondurans working with them, the agricultural credit and extension systems, the rural schools, the roads, and other services were expected to benefit and modernize the small farmer as well as the large.

However, these development institutions made new capital resources and technical information available within the existing hierarchical dichotomous communication structure without an explicit policy of redistribution of bases of power in the rural sector and, most important, without establishing <u>direct communication linkages</u> between development agencies and the rural lower-status population. The new resources and information, administered usually from the regional market

city, tended to arrive directly in the hands of the rural elites. For example, by 1965 nearly 80 percent of the agricultural credit of commercial and government banks in Honduras was being directed toward the production of cotton and cattle which was almost entirely in the hands of large producers. 12/ The agricultural extension service adopted a plan of working with individual farmers, and, with few trained agronomists and restricted funds, only large, easily accessible producers received this technical help. The physical and social isolation of small farmers in outlying rural communities posed obstacles to their getting into the central market towns for technical advice, purchase of supplies, or taking advantage of better markets. In a 1970 survey by the author, it was found that only 25 percent of the small farmers of 2.5 hectars or less visited the regional market city once a month while 80 percent of those with 70 hectars or more visited this often. Lower-status farmers tended to have access to credit and marketing opportunities only through the rural elites.

As a result of these tendencies, the larger landholders began to buy up land or simply take over large areas of national and ejidal (municipal) land, evicting small cultivators in a modern enclosure movement. An agrarian reform law was passed in 1962, but this remained largely unenforced until in 1969 the growing discontent among semi-subsistence cultivators exploded in massive land occupations and mobilization in two large campesino federations to force the government to distribute national and ejidal land.13/ Under this pressure the Honduran Government has responded with an increasingly progressive agrarian reform policy, but this still has not improved the situation of the highland farmer whose basic problem is low productivity and fractionation of existing land holdings.

Thus, the development policy employed in Honduras has directly contributed to the increasing social and economic power of the rural elite and the deteriorating position of the rural lower-status population.14/ In the context of Honduras and many other Third World countries, "rural development" means reversing this continued worsening of the socio-economic conditions of the large majority of the rural population.15/ The criteria for judging whether the PPM or any other agency contributes to rural development are: 1) the measure in which they provide direct access (not through rural elites) to the available socio-cultural, economic, and political alternatives within the national system, and 2) the measure in which campesino groups are assisted in building an independent power base as well as collective decision capacity so that they can effectively select the alternatives which are in their interest.

1.3 The Evolution of the Strategy and Objectives of Rural Development in the PPM

Many evaluations begin with a statement of objectives of a service organization which has been established to achieve certain

changes in its clients, assuming, rightly or wrongly, that the clients are rather passive receptacles of these objectives. In the present case, although the radio schools of ACPH began with certain general objectives, they approached, not a series of scattered clients, but an incipient campesino-based movement in rural communities which already had certain objectives and organization.

The PPM is referred to as a movement in part because the campesino leaders of the PPM so frequently refer to their activities as "el movimiento" but also because, sociologically, it is a structure of leaders and followers, with a definite concept of "insiders", "outsiders", and "enemies", acting as a collectivity to solve certain problems in rural communities that have their roots in the deteriorating socio-economic conditions.16/ When the leaders of the PPM speak of "el movimiento" the "we" refers to "we campesinos" and, although they look upon many of the rural pastors of the Catholic Church, and the professional staff of CONCORDE as trusted, sympathetic allies who help them obtain resources, including ideas on organization and strategy, they feel that ultimately it is their strategy, they have to carry it out, and their first loyalty is to their followers, not to CONCORDE.

Thus, the objectives to be evaluated are the result of a process of interaction of the PPM and the urban-based allies, who also have their interests, in a common search for "solutions".

1.4 The Beginnings of the PPM in the Action of the Catholic Church

The first steps toward what eventually developed into the popular promotion strategy in Honduras were taken by the bishops of the Catholic Church who sought to establish a system of radio schools following the model of ACPO in Colombia. A young Honduran priest, P. Jose Molina, went to Colombia to study the ACPO method and, in September 1960, a radio station and the radio schools were functioning on a small experimental basis in the vicinity of the capital, Tegucigalpa.17/

Initially, the radio schools in Honduras adapted the system and even the textbooks used in Colombia. The rural pastors were asked to promote the idea of literacy classes among adult campesinos and to select in each community a volunteer auxiliary teacher of campesino background, in Honduras called a monitor. These were briefly trained in recruiting students in the community, assembling them for classes, supervising the work of the students in class according to the instructions given by the principal teacher, and presenting monthly reports of attendance and progress in each school. A radio, a blackboard, and other materials were provided to each monitor, and texts were distributed free of charge. At the end of the year, examinations were given, and these were brought to the central office in Tegucigalpa to be graded, giving each student a pass or fail mark.

The initial rapid expansion of radio schools in Honduras--from 343 schools and 7,240 students in 1962 to 754 schools and 14,624 students in 1964--was due in great part to the interest of the rural pastors but, especially, to the existence of an infrastructure of religious organizations out in the rural communities. In the late 1950's the traditional religious leadership that had long maintained the folk religious practices almost independently of the formal structure of the Church joined in with the rural pastors in many parts of Honduras to form what became a widespread religious revitalization movement. The more formal structure of this was a network of religious organizations that saw personal conversion and the restoration of moral standards in rural communities as a solution to the secularization, entrance of Protestantism, the increasing political strife, and other vaguely felt "problems" of changing times. These organizations developed a highly motivated nucleus of leaders and followers, a communication system of monthly meetings of leaders in the parish center and of periodic visits of lay supervisors traveling from community to community, and the conviction that through this religious movement they were going to cause significant change in the personal lives and the cultural norms of the community.

When the pastors were approached to establish radio schools, they, in turn, presented the idea in monthly meetings to leaders of the neighborhood religious organizations. The radio schools and community improvement campaigns became an "apostolic activity", and learning to read and write, adopting new health and agricultural practices part of the personal "conversion experience" or, as it was later termed, becoming "conciente" (aware). The basic problem of the campesinos was defined as lack of education (ignorancia) and traditionalism (conformismo) and the solution was seen to be education. The supervisors of the religious organizations became the paraprofessional coordinators of the radio schools and other activities of the PPM.

1.5 Introduction of an Organizational and Communication Strategy

Reflection on the initial experience of the radio schools convinced both the campesino leaders and the directors in Tegucigalpa that literacy training and home-community improvement campaigns were not, in themselves, an adequate adult education program for campesinos, much less an adequate response to the increasing socio-economic problems. The study of alternative models of radio schools and rural development, especially the popular promotion model of DESAL in Chile, also stimulated this questioning of objectives. After 1963 the emphasis switched to forming community organizational and leadership structure among lower-status campesinos so that this sector of the community would not only be able to confront a series of local community and economic problems but also to obtain from outside agencies needed funds and technical assistance. The literacy program continued, but the concept of adult education was broadened to development of attitudes and skills

of communal activism, participatory leadership, and capacity to manage local organizations.

The transition to emphasis on campesino organization at the local level was accompanied by a search for broader technical and economic backing among urban-based groups sympathetic to the interests of the lower-status rural sector. Policy making and financial responsibility for the radio schools were passed from the direct control of the bishops to a board of directors made up of professionals connected with various national development agencies; financial assistance was obtained in some degree from the Honduran government, but especially from international sources. More important, the director of the radio schools invited a group of idealistic university students and young professionals associated with the Christian Social Movement, who were interested in working directly with campesinos, to teach in the leadership training courses and provide technical assistance to the organized groups. By 1970, individuals from this group--usually with university-level training in education, agronomy, or agricultural economics--were directing and staffing a series of existing agencies working with the PPM--the radio schools, Caritas of Honduras, and the credit union cooperatives--or they had formed new service organizations for the PPM. These young laymen brought with them a clearer strategy of socio-political mobilization and attempted to respond to the needs of the PPM for credit, technical assisstance in agriculture, and organization for land recuperation.

This combination of the rural PPM and the urban-based agencies collaborating with the PPM gradually developed a rural-urban communication system which provided the lower-status campesinos participating in the PPM with more direct access to technical and economic resources: (1) A community leadership which defined problems on the basis of local, "campesino" perceptions; community representatives responsible for channeling petitions for outside support; and a highly motivated organization which was able to carry out local projects with a minimum of external dependence. (2) An intermediate communication network consisting of monthly district meetings of representatives of various community organizations; campesino paraprofessional supervisors traveling on horseback and accustomed to a campesino style of life; a regional leadership training center; and the use of a regional radio station which would broadcast organizational notices, radio-school classes, and technical-cultural classes for local organizations. (3) The technical and economic support of urban-based agencies which had sufficient independence from traditional urban elites to define their objectives specifically in terms of lower-status campesino needs and which were staffed by individuals with a special interest and capacity for working with this rural population. Concretely, this rural-urban communication system was made up of a series of parallel linkage structures which were closely coordinated at the local and national level: the fundamental PPM linkage system based on the radio-school administrative structure; the

project linakge system channelling funds from government and international agencies, such as CARE, to local community development councils; the cooperative linkage system administered mainly by the Honduran credit union federation, but assisted also by the Honduran Development Foundation; and rural homemakers' clubs working with women in the area of health and nutrition; and, in some communities, small agricultural and consumer cooperatives supported by the Centers for Agricultural Services of the Association for Human Development. In 1971, these national agencies made their informal collaboration official with the formation of CONCORDE, described above in the introduction, in order to coordinate planning, financing, and general policy making.

Thus, the popular promotion strategy of rural development in Honduras is best understood as a social movement involving lower-status campesinos and urban-based allies seeking to establish an organizational structure for social change in rural communities and a communication network linking organized lower-status groups directly with resources agencies.

As this collaboration between the PPM and urban-based agencies developed from 1961 to 1972, its objectives tended toward ever more basic, structural changes in the campesino sector, transforming the significance of earlier objectives. By 1968 and 1969, with growing conflict between large landholders and increasingly landless semi-subsistence cultivators, the PPM local organizations which had been involved in radio schools, community infrastructural projects, and credit cooperatives, moved directly into regional and national interest group organizations to pressure the government to distribute national and ejidal land. At the same time, the radio schools of ACPH adopted the Freire psychosocial or concientization method, and adult education became the medium for stimulating greater awareness of the exploitative action of the rural elites and awareness of the need for much more aggressive agrarian protest. In this evolution of the PPM four general objectives became increasingly explicit: (1) communicate a series of fundamental skills in the area of literacy, health, and agriculture; (2) through methods of concientization, develop a greater awareness of rural problems and reinforce values of communal activism; (3) on the basis of greater awareness of community and campesino problems and greater sense of solidarity, strengthen campesino leadership and the capacity to manage organizations; and (4) finally, build regional and national interest-group organizations and the capacity to deal with governmental agencies.

Part II, which follows, will present the evaluation of the effectiveness of the PPM in the first of the objectives given above; Part III evaluates the PPM in terms of the second, third, and fourth objectives.

1.6 Methodology Used in This Evaluation

The specific causality of the PPM in achieving these objectives has been operationally defined in terms of participation in adult education programs but, more important, centrality of access within a series of communication linkage systems between the urban-technical and rural, lower-status sectors: the fundamental PPM linkage, the cooperative linkage system, and the homemakers' clubs involving the women. The differential opportunity of campesinos to take advantage of the PPM educational and communication systems has been operationally defined in terms of amount of land owned and centrality in internal communication networks within the community (internal centrality) and frequency of visits to the regional market city (external centrality).

Two sets of data are reported in this chapter. The first includes a sample of 613 individuals in thirteen communities - six communities without any PPM linkage structure as a control group, three communities with a low degree of PPM linkage structure, and four communities with a high degree PPM linkage structure. The second set of data presents results from interviews with a sample of 595 students and ex-students of the radio schools of ACPH applying a test of literacy and arithmetic capacities as well as other questions.

2. THE EFFECTIVENESS AND RELEVANCE OF THE LITERACY, HEALTH, AND AGRICULTURAL EDUCATION EFFORTS OF THE PPM

Although the directors of ACPH and the campesino leaders of the PPM have insisted that the principal objectives of the PPM are concientization and developing campesino organization, the radio schools were, in the period from 1961 to 1971, the supervisory and promotional framework through which the other PPM activities were carried out. Literacy and, to a lesser extent, health and agriculture education occupied a major portion of the time and effort of the PPM. Therefore, Part II considers rather extensively the first of the objectives of the PPM, following the two questions posed earlier:

1. How effective has the adult education program been in achieving its objectives in literacy, arithmetic, health, and agriculture?

2. If campesinos are obtaining literacy and other skills, how useful have these skills been for individuals and for the rural community?

2.1 The Effectiveness of ACPH and the PPM in the Literacy Program

The primary focus of the evaluation of the achievement of objectives in the literacy program has been to determine how many gained

functional skills in reading, writing, and arithmetic through the radio schools. But it is helpful to review, first, to what extent ACPH, working through the PPM, was successful in establishing a national system of radio schools and, second, to compare the effectiveness of the psychosocial method of ACPH with the direct method of the official adult education program and the Alfalit method.

2.2 Problems in Establishing a Massive, National System of Radio Schools

Since in 1961, there were no adult education programs working in rural areas of Honduras, ACPH, working with the incipient PPM, set out to establish a nationwide network of radio schools. Under the energetic direction of Fr. Pablo Guillet, who was appointed to assist Fr. Molina, the radio schools reached, in the first three years, a peak of 14,624 students enrolled, 8,332 students examined, and 5,768 students passed. 19/ Most of this early success was based on the strong promotion of the PPM among the French-Canadian foreign missionary group in southern Honduras, but the dependence on a single radio broadcasting station limited to a broadcasting radius in southern and central Honduras prevented extension of the radio schools to other regions.

With the removal of Guillet in 1964 due to internal disputes within the Catholic Church in Honduras, there was no strong central administration in ACPH from 1964 to 1967. The plans of Guillet for building a promotional infrastructure and broadcasting capacity throughout Honduras collapsed and enrollment and examinations declined in this period by 25 to 30 percent.

In 1966, Lic. Fernando Montes was named the first lay director of ACPH, and, with a five-year grant from the U.S. Agency for International Development in early 1968, he recruited a fulltime professional staff, most of them with degrees from the Honduran Superior School for Education. This new educational staff moved to revise the curriculum completely, introducing the adaptation of the Freire psychosocial method with a new series of broadcast classes and texts. Montes encouraged the bishops and missionary superiors in five other regions to set up an administrative and promotional system similar to that of the PPM in southern Honduras, and to establish their own regional radio stations or make arrangements with local radio stations for broadcasting. This reorganization of ACPH is reflected in the rise of enrollment to more than 15,000 in 1968 and to an average of more than 20,000 annually after 1971.

Finally, in 1972, realizing that the literacy classes were inadequate for the changing educational needs of campesinos, ACPH began an accelerated primary-school program in four grade levels and was permitted by the Ministry of Education to grant an officially recognized primary-school diploma.

This analysis points up the importance for the radio-school systems of having some initial cooperation from local community leadership and the support of an auxiliary supervisory and promotional system at the district and regional level, such as the Church, a peasant association, or systems of cooperatives. The radio schools expanded rapidly in southern Honduras due to the communication linkage system of the local religious organizations, the interest of the rural parishes in improving the situation of the rural, lower-status campesinos, and the initiative of the Catholic Diocese in setting up a leadership training center, operating a regional radio station, and inviting other development agencies to use the system. Once this organizational structure was repeated in other parts of Honduras, the radio schools did expand rapidly.

Still, even in the areas where the radio schools have functioned well, only a small fraction of the population over fifteen years of age is enrolling and, over a ten-year period, an average of over 45 percent of the enrolled students have failed to persevere to the year-end examinations. This suggests that even were there ample financial and administrative resources the real obstacles to "massive" programs are factors impeding campesinos from taking full advantage of the program--a question I shall return to later in the analysis.

2.3 The Comparison of the Psychosocial Method of the Radio Schools of ACPH with the Direct Method of the Government Adult Education Program and the Alfalit Method

Beverly Chain carried out, in 1973, an exploratory study of three adult education programs in Honduras, comparing the relative effectiveness of direct-teaching methods of the schools operated by the Ministry of Education, the Alfalit schools promoted largely by the Mennonite Church, and the psychosocial method of the radio schools of ACPH. On the basis of a similar test of literacy, arithmetic, and community involvement, Chain found that students from the government schools using the direct method tended to have the highest scores in literacy and arithmetic skills, the Alfalit students next highest, and the ACPH students the lowest. However, it was difficult to make comparisons because the government schools were in urban areas, the Alfalit schools in largely marginal urban-rural areas, while the radio schools of ACPH were exclusively among rural, lower-status sectors. Also, 90 percent of the students in the Ministry schools had spent over 180 hours in class, 61.4 percent of the ACPH had spent more than 180 hours in class, while only 30.4 percent of the Alfalit students had this much class time.

Chain attempts to balance these various factors in the comparison.

> If one assumes that the Alfalit handicap of fewer hours of training approximately compensates for the

> cultural handicap of the psychosocial students (lower-status in rural areas), these two groups could be said to have done about equally well in the task of skill training (reading, writing, and arithmetic) with the students of both making a better showing in relation to hours of training and cultural handicaps than did the government students whose raw scores were higher. 20/

The conclusion of Chain, comparing the psychosocial and Alfalit methods, was that the Alfalit method was somewhat more effective in skill training while the psychosocial method was more effective in "developing persons aware of and able to cope with community problems which affect their lives". 21/ Of the three models in the study in Honduras, "the one which seems to offer the most benefit for the time and money invested, is the psychosocial method in Honduras". 22/

2.4 The Effectiveness of the Radio Schools of ACPH in Bringing Adult Campesinos to Functional Levels of Skill in Reading, Writing, and Arithmetic

This section presents the results of the application of the test of literacy and arithmetic to a sample of 595 students and ex-students of the radio schools of ACPH. 23/ An attempt was made to apply the test to every student or ex-student who had enrolled in the radio schools at least a month in a stratified random sample of fifteen communities. If a former student was not able to be found in the community, at least information regarding age, education, and other basic descriptive characteristics was obtained from the family and the monitor (or former monitor). Thus, in addition to the 595 tested students, some information was gathered on an additional 199, or a total of 794 individuals. 24/

In the present evaluation, minimum functional literacy, is defined as a score of 30 or above on the reading and writing test, which meant that the subject was able to recognize a series of words, write his or her name, identify sketches (house, hat, shovel) with matching written words, read orally a very simple message with large letters, and comprehend it sufficiently well to answer at least one or two of five questions on the passage with one or two words in writing. Functional literacy, a score of 40 or more, implied sufficient comprehension of the simple passage and answering all of the five questions in writing. Advanced functional literacy, a score of 50 or above, was defined as the capacity to comprehend a passage of average difficulty on a subject of campesino interest and answer in writing at least some of the questions on this passage. Scores of 50 to 57 were associated with the ability to read from a newspaper presented to the student a predetermined passage on a subject of agrarian conflict and answer in writing most of the seven questions on the article. Scores of 58 to the maximum of 64 indicated a general reading capacity.

In calculating the effectiveness of the radio-school program, it is necessary to take into account the fact that many radio-school students have already gained some literacy proficiency in the pubic primary schools. 25/ The radio-school monitors, in recruiting students, have encouraged all adults in the community to enroll since many have dropped out of the public primary schools before achieving functional literacy or, through disuse, may have forgotten much of what they learned. Also, monitors maintain that all can learn something of health and agriculture or will be exposed to concientization regarding campesino problems. In the sample of 794, fully 63 percent had spent at least some time in the public primary school and 37 percent said that they had finished the second grade so that previous primary-school experience could explain the literacy achievement of up to half of the radio-school enrollees.

Previous enrollment in the public primary-school does not necessarily mean, however, that the radio-school student has gained his literate capacity in the public schools. In order to estimate the relative impact of previous primary-school experience, the question was asked as part of the interview accompanying the test of skills, "where did you learn to read and write, in the public school or in the radio school? That is, where did you learn more?" Since, in a previous exploratory study of literacy achievement, many had indicated that they had received a good beginning in the public school, but had significantly improved their capacities in the radio school, or, more frequently, through disuse, had forgotten what they had learned and then relearned in the radio school, these options were presented in this question also.

If the radio schools alone are the only educational experience, less than 30 percent of the radio-school students completing at least one term achieve even minimum functional literacy, less than 20 percent achieve functional literacy, only 13.6 percent have advanced functional literacy skills, and only 7.2 percent can read a newspaper with acceptable comprehension. However, if there has been a previous public primary-school experience, even if the respondents say that they had forgotten most of what they learned, 75 to 90 percent achieve minimum functional literacy, 50 percent achieve functional literacy, and 20 to 30 percent can read a newspaper well. Of the 196 in the sample of 314 with at least one full term in the radio schools who have achieved minimum functional literacy, only 37 individuals or 19 percent can attribute this to radio schools alone.

This low level of achievement of illiterates in the radio schools of ACPH is understandable if one takes into consideration the extremely elementary nature of the instruction in the period from 1961 to 1972, even for those who are in the advanced classes, and the lack of any continued reading program beyond the elementary texts that would provide an opportunity to use these skills. The striking difference

between those enrolling as illiterates and those with at least some previous public primary-school experience, even those who say they had forgotten most of what they had learned, indicates that the more formal learning experience is more effective in achieving solid literacy skills, at least in the system the Hondurans adapted from ACPO of Colombia.

However, it is significant that 120 or 61.2 percent of the 196 literate subjects in the sample of 314 examined students are public primary-school dropouts who attribute part of their capacity to the radio schools. The reader may question just how important the radio schools have been in this since many with previous primary-school background could have gained nearly all of these skills before enrolling in the radio schools. To explore the contributions of the radio schools further in the case of primary-school dropouts, a cross-tabulation was made including only those examined students with one full year in the primary school or less. With only one full year in the public primary school, a student would not have achieved a very high level of literate capacity before entering radio schools.

The analysis of this cross-tabulation shows that these primary-school dropouts with very little primary school, who say that the radio school significantly improved their capacity, still represent 48 percent of the functionally literate groups in the sample. This suggests that one of the important contributions of the radio schools from 1961 to 1971 has been to help primary-school dropouts to achieve higher levels of functional literacy. It should be noted, however, that many of those with only one year of public primary school are achieving higher literacy levels such as capacity to read a newspaper well.

In the case of arithmetic skills, there was evidence that many campesinos had learned, through ordinary economic transactions, to work quite complex problems "in their heads" in very unorthodox ways. Therefore in the test, the subjects were permitted to resolve typical arithmetic problems encountered in the life of campesinos, in any way they could, although the formal methods were tested also. The fact that 96 percent of the campesino students and ex-students of the radio schools could recognize and write small numerical quantities (up to 100) suggests that this level of arithmetic skill is probably picked up in the normal life transactions of the typical campesino.

However, only 43 percent of those with radio-school experience alone can add and subtract small quantities while 70 to 85 percent of those with previous public primary-school experience have this skill; and less than 10 percent of those with radio-school experience alone can divide and multiply small quantities (100 or less), while 25 to 33 percent of those with previous public primary-school experience have this skill. Almost no enrollees with radio-school experience alone can solve the more complex arithmetic problems of multiplication and division involving larger quantities.

Thus, the breakdown of levels of achievement in arithmetic skills according to major learning experience follows the same pattern as that of the skills in reading and writing: those with no previous primary school have very low levels of achievement.

Given the fact that the radio-school terms were short and only repeated the same elementary material year after year with divisions for beginning and advanced students, it generally has been necessary for a student to enroll at least two and possibly more terms to achieve functional literacy. However, those who attribute their learning experience primarily to public primary schools would almost certainly have achieved functional literacy before entering the radio schools and these students were excluded from this part of the analysis.

In fact, 54 percent of those with two terms and 40 percent of those with three terms completed in radio schools still have not achieved minimum functional literacy, and 60 percent are not achieving functional literacy. Even in the case of those with three terms completed in radio schools still have not achieved minimum functional literacy, and 60 percent are not achieving functional literacy. This supports the observation that not a few radio-schools students have been enrolling year after year, perhaps out of friendship or kinship with the monitor, with relatively little progress.

The fact that 60 percent of the radio school students who have laboriously attended classes for terms stretching over three years still have not achieved functional literacy certainly calls into question the system of ungraded adult basic education that was used by ACPH from 1961 to 1972. However, one must still ask whether the more basic problem lies not so much in the system of radio schools, but in the life conditions of the campesino.

2.5 How Many Honduran Campesinos Became Literate Through ACPH and the PPM From 1961 Through 1970?

Since the sampling of 794 radio school students used methods that would permit a generalization from the sample to the universe of 107,715 students who were enrolled by ACPH from 1961 to 1970, it is possible to estimate the total number of campesinos who achieved functional literacy through the radio schools of ACPH from 1961 to 1970.

In those ten years 40,112 of the 107,712 enrolled students were examined and passed at least once, according to the official records of ACPH, but since individuals re-enroll and repeat examinations up to seven times, we must reduce this to individuals. By multiplying the number of individuals in each category of years completed by examinations, there are a total of 751 examinations, but only 328 individuals or 44 percent of the 751 examinations. Thus, we may estimate that 44 percent of 40,112 or 17,649 individuals were examined and

passed. However, in the sample, only 196 or 62.5 percent of the 314 examined student achieved minimum functional literacy.26/ Finally, taking the percentage of the 196 examined students achieving minimum functional literacy that is attributed to each of the four different educational experiences and using this as a basis for analysis of the 11,030, we conclude that 19.9 percent or 2,195 of the 11,030 would attribute their capacities to previous public primary school or other learning experience, 61.2 percent or 6,750 represent primary-school dropouts who regained or substantially improved literacy skills through the radio schools, and 18.9 percent or 2,085 are individuals who attribute their literacy skills to radio schools alone. On the basis of these estimates, the radio schools were a significant factor in the literate capacities of approximately 8,835 individuals up to the end of 1970.

Although the total population over fifteen years of age in the twenty-four municipalities where the radio schools operated was projected as 150,000 in 1967, 27/ it is estimated that radio schools were now operating in up to one half of the rural neighborhoods in these municipalities so that, at most, 100,000 adult campesinos had the opportunity to enroll in radio schools. Thus, approximately 10 percent of the potential population took advantage of and benefitted significantly from the literacy program of ACPH.

Since the annual operating budget of ACPH from 1962 to 1970 was approximately $35,000 or a total of $315,000 in nine years, the cost per student signficantly assisted was about $35.00. 28/

Summing up, the radio schools of ACPH did provide an opportunity for those highly motivated illiterates and public primary-school dropouts who attended classes faithfully for two or three terms. After some difficulties in the mid-1960's, ACPH was able to extend the successful model of the PPM in southern Honduras to other regions and mount a nation-wide system by 1971. Beverly Chain concluded that, considering the difficulties of working in rural areas, the psychosocial system of ACPH compares very favorably with the Alfalit and official efforts in adult education.

However, if the reader has conceived of radio schools as an instrument for massive and rapid reduction of illiteracy among campesinos in Honduras, the achievements of the ACPH and the PPM must seem disappointing. Relatively few adult campesinos took advantage of the radio schools and surprisingly few illiterates were achieving functional literacy through the radio schools. The question arises, "Is this the fault of the system of teaching, the supervision, the lack of motivation of the students, the situation in which the campesinos live, or a combination of all of these factors?" Assuming that the question is a valid one, in the following section we will analyze what seem to be some of the problems of literacy campaigns among rural lower-status

groups. This also leads to the second question posed in this study, "How significant or useful are literacy skills in the life of the lower-status campesino?"

2.6 The Relevance of Literacy Among Lower-Status Campesinos

In analyzing the problems of radio schools among campesinos many insights were gained by direct observation of the PPM in rural communities, but the best witnesses were thought to be the radio-school students themselves. Therefore, along with the tests, the students and ex-students were asked a series of questions regarding the problems of radio schools, their motivations in enrolling, and how they use their literate capacities.

Since it was evident in exploratory surveys of the radio schools that the level of achievement was low, the students were asked, "If you did not learn as much as you would have liked in the radio schools, what do you give as the reason?" Although a few, 7.4 percent, feel strongly enough that they have learned considerably so that they reverse the question, the great majority are of the opinion that they could have learned more. On 6.7 percent attribute the problem to some deficiency of the monitor, although objectively some monitors are deficient in their capacities as assistant teachers. Some 26 percent blame their lack of real interest or lack of capacity, and 10 percent mention poor health, advanced age, or bad eyesight as the obstacle. The reason most frequently mentioned by 45 percent, is the lack of regular attendance. However, irregular attendance is but a symptom of a more basic problem, and the question was asked, "If you did not attend the radio schools regularly, what was the reason?"

The fundamental reason for irregular attendance at the daily classes from 4:00 to 6:00 P.M. are the work requirements. Many explained that by the time they finish their work in the fields and walk one to three kilometers to the place of the classes, they are late. Others, both men and women, gave as a reason for poor attendance the necessity of leaving the community to seek work as harvesters on coffee and cotton plantations.

Information obtained regarding the socio-economic status of this sample of 794 radio school students shows that 30 percent are from households which have no land and find their principal support in wage work or land rental supplemented by wage work; an additional 36 percent are from households with less than the six manzanas estimated to be necessary to provide the subsistence needs of one family, and they also must seek supplementary land rental or wage work. Thus, approximately two-thirds of the sample are in a situation of economic dependency that directly affects their ability to take advantage of the radio schools.

One might argue, as do some radio-school monitors and coordinators, that many students, if they were more motivated, could change

the periods of work in the fields and the home or make arrangements with the patron. But even if this were possible, there is serious question as to whether, under the present circumstances, many campesinos see in literacy a sufficient advantage to justify great sacrifices.

The further analysis of the responses to the question, "Why is it important for a campesino to know how to read and write?" indicates why literacy may be valued but still not have a high priority. 29/ Fully 34 percent give economic reasons for the importance of literacy: "to avoid being cheated" (that is, the ability to defend oneself in business transactions) and "to perform one's work better". But the great majority of jobs in rural reas are manual labor which do not necessarily demand literate capacities, and the market transactions of most semi-subsistence farmers are very occasional experiences carried on within the community informally with larger farmers or traveling merchants. 30/

The second reason for literacy, in order of importance (16 percent), is the ability to communicate by letter or telegram, but this is a rare occurrence in the lives of most campesinos since there is no mail delivery service and most live from five to ten kilometers from the nearest telegraph office. There is relatively little emigration from the community to distant cities at present so that relatives and friends are still largely within the community. When an occasional letter does arrive, a son or daughter or other relative can read it to them.

The literate's capacity for holding an office in a neighborhood organization, in the local community development committee, or in the muncipal government holds some importance since 13 percent give this as a first choice and 17 percent mention it as a second choice. Holding an office in the local community organizations is a function that, to a great extent, has been created by the PPM itself. When community organizations such as the development committees, the homemakers' clubs, the religious Celebration of the Word of God (which requires the ability to read the Bible) are introduced, the main obstacle is that people interested or capable of leadership are not sufficiently literate. The Catholic Church has been especially interested in promoting the radio schools in order to prepare lay ministers to read the Bible and other instructional booklets. The PPM has seen the adult basic education program as essential for its goal of developing campesino leaders, and the opportunity for lower-status campesinos for entering into leadership positions has been a motivating factor in becoming literate.

The ability to read public news media or books appears to be relatively unimportant in the eyes of campesinos since only 8.9 percent mention this. But when one considers the responses to two further questions, "What things are you accustomed to read most often (at least every two or three months)?" and, especially, "What things do you have in the house to read?" it becomes clear that there is little to read and little is read.

Those who have not reached at least minimum functional literacy are eliminated in the analysis of this question since obviously these would be reading little or nothing. However, 25 percent of those with some literate capacity say that they read nothing and 35 percent say that they read primarily religious materials (the Bible, catechisms, religious booklets, etc.), probably an infrequent occurrence in the case of most. Another 16.6 percent say that they read the texts of the radio schools or the public primary schools which they are using or which have been brought into the house by others. If only 10 percent are reading newspapers, magazines, books, or instructional pamphlets of any kind, one of the major reasons appears to be the absence of this sort of reading material in the home.

In inquiring about the reading materials in the home, the respondents were asked to show or indicate the book or pamphlet said to be present. Some 30 percent have nothing in the house to read (Cf. Table 1). The most common reading materials in the home, 37.5 percent, are the very simple pamphlet-like texts of the radio schools of ACPH and of the public primary schools. These are either being used in classes or have been re-read many times in classes, and it is unlikely that they are returned to very often. Some 24.6 percent have Bibles, catechisms, novenas, and other religious materials, but it was observed that these were frequently hidden away in trunks or boxes, and the younger radio school students were often only vaguely aware of them. Printed novenas and catechisms are often considered more as sacred talismans to protect the house than as reading materials. Only 7.0 percent have newspapers and magazines, and these are outdated since almost no lower-status campesinos have regular subscriptions due to lack of financial resources and lack of regular mail service. Surprisingly, only 4.2 percent have the popular almanacs, and only 2.2 percent have instructional pamphlets on agriculture, health, or coperatives, in spite of the fact that PPM has promoted these kinds of activities. The number who have books such as novels, biography, or dictionaries, 2.2 percent, is negligible.

A major factor in the lack of reading materials is that publishing houses in Honduras have not taken a specific interest in the campesino sector as a market. Unlike ACPO of Colombia, which publishes a weekly newspaper, "El Campesino", and a series of inexpensive books which have a retail price of U.S. 10 cents, 31/ ACPH has had no publishing or continued reading program. An experimental project of village libraries located in selected communities was never very successful largely because the central office of ACPH and the PPM leaders placed little emphasis on this.

These data on the functionality of literacy in the life of the campesino make clear the problem of literacy campaigns among semi-subsistence farmers in Central America. The system of ACPH apparently has intended to bring campesinos to a minimum functional literacy with

TABLE 1

Reading materials in the house of Radio School students

Reading Materials in the Houses	Number	Percent
1. Nothing	122	20.5
2. Religious materials (Bibles, catechisms)	146	24.6
3. Texts of radio schools or public schools	223	37.5
4. Newspapers and magazines	42	7.0
5. Almanacs	25	4.2
6. Books (novels, dictionaries, history)	20	3.4
7. Instructional pamphlets on agriculture or cooperatives	13	2.2
8. Other materials	2	.3
No response	2	.3
TOTAL	595	100.0

the expectation that with the use of these skills the individual will gradually become more fully literate. But the long hours of manual labor necessary to cultivate enough land to provide food for subsistence leave little time or energy for purely informative or leisure reading and, with barely enough cash surplus to buy clothing and food items not produced on the subsistence plot, there is little money for reading materials or for the lamps and oil for night reading. 33/ Even though nearly half of the respondents thought that literacy was important in an increasingly market-oriented economy, in actual fact the semi-subsistence farming and unskilled manual labor for neighboring farmers demands few literate capacities. The centuries-old agricultural methods of highland campesinos are handed on from generation to generation orally. In spite of the presence of rural clinics and programs such as the homemakers' club, medicine is practiced with traditional remedies and with the help of local curanderos. 33/ Most campesinos are producing primarily for their own subsistence needs or for distribution within the community, and they are not forced to carry on frequent market transactions directly with the urbantechnical sector.

The introduction of the radio into a modern peasant society before literacy has become common, ironically, has slowed down the process of making the population literate. All the functions that newspapers and magazines might fill are handled quite well by the radio, in many ways a more interesting and economical instrument of communication. Honduran society, even in its urban-technical sector, is largely an oral culture, and the radio is as important as newspaper and magazines. Examples of this are the "radio periodistas", the opinionated news commentators, who are listened to so avidly and influence public opinion so much, and the "radio novelas, which are an important form of popular entertainment.

These data, reporting the problems that radio-school students themselves see in becoming and staying literate, indicate that the major obstacles in overcoming illiteracy on any massive scale are not so much the lack of motivation or the deficiencies of the program, although these may exist, 34/ but the life situation of the rural, lower-status population. Given the economic dependency and poverty of most campesinos, it is difficult to obtain literacy skills and, if these are possible to obtain, their limited usefulness often does not justify the unusual sacrifices involved.

This analysis also suggests that the deeper problem lies beyond the immediate poverty and economic dependency of campesinos and is to be found in the hierarchical, dichotomous social structure reinforced by the modernization process. Traditionally, literacy has been a characteristic associated with roles in the urban-technical sector which has defined itself as the ruling sector and, under recent development policies, continues to exercise ever greater political, economic, and social power. Becoming literate does not mean simply gaining the

capacity to interpret written symbols, but rather assuming a series of role behaviors, adopting specific values and aspirations, and incorporating into one's world view the concepts that are part of the exercise of political, economic, and social-cultural decision making in a country. The mechanical skill of learning to read and write simply adds the final details to a much broader picture. The implicit premise, accepted even by many campesinos, is that lower-status campesinos are not expected to participate in the various national decision-making processes, and, therefore, do not need to be literate. The local and regional rural elites function as the political, economic, and religious intermediaries translating back and forth across the boundaries of the ruling, literate sector. Thus, the literate roles in rural communities have been occupied by the "leading families", and what education has existed in rural areas of Honduras has served to communicate literate skills to individuals from these families or to escalate their children up the hierarchy of the urban-technical sector.

If this analysis of the conditions under which literacy is truly functional in the life of the highland campesino is correct, then it follows that: (1) occupying roles providing access to internal and external communication networks in rural communities and to basic economic resources is a condition prior to having aspirations for, and actually achieving, functional literacy; (2) given the present power structure in rural communities, introducing the institution of literacy among rural, lower-status campesinos depends on improving the social and economic status of this sector vis-a-vis the rural elites. This also calls into question the premise of many who are involved in adult education in Latin America, that it is first necessary to make campesinos literate in order to improve their social and economic position and bring about social change. The position of the PPM leaders, that adult education programs, to be effective, must be integrated into a process of campesino mobilization leading to changed power relationships between campesino and urban-technical elites at the local (rural) and national level may be more nearly correct. The analysis of these further questions of conditions of functional literacy is taken up in the following section.

2.7 The Relationship of Social Structure, Educational Aspirations, and Educational Achievement in Rural Honduras

The two propositions stated above imply two empirical questions: (1) "Is there evidence that families in rural communities of Honduras who have greater access to communication networks (greater centrality) and greater economic resources tend to have greater aspirations for and actual achievements in literacy and other educational skills?" and (2) "Is there evidence that lower-status campesino families, by participating in the PPM, have moved to positions of greater centrality and economic power and, subsequently, have developed both aspirations for education and literate skills?" This latter question

would demand a pre-test of PPM participants and a later post-test to measure change carefully. Since this study was made at one point in time, reconstruction of the casual process must be, in part, inferential. However, the combination of the historical analysis of the PPM, secondary data, and data from the survey of 613 campesinos does provide a basis for an exploratory investigation of this question.

The detailed descriptive study of leadership and bases of social power in communities of southern Honduras revealed that those families which are more central in communication networks and more influential in community decision-making are often the families which have a more secure economic base in terms of land ownership, especially in communities where the PPM has not been active in moving lower-status individuals into positions of leadership. These more central families are also more likely to keep their children in school longer because they expect their children to occupy the same roles of leadership and because they have the economic means to keep them in school.

This observation is supported by secondary data which show that the public primary school dropout rate in rural communities is closely related to lower socio-economic status. Public primary schools up to the fourth grade are now located in the great majority of small rural communities and schooling up to the sixth grade is available, if not in the immediate neighborhood, at least in a nearby neighborhood, but only 35 to 40 percent of the children of school age (seven to fifteen) in the rural areas are in schools. Although exact statistics are not available, there is a relatively large number of children who never attend school or drop out after a few months, and 50 percent of all first-year students in Honduras do not enroll for the second grade. 35/ The percentage for the rural areas alone is undoubtedly much higher.

An exploratory study of student drop-out in Honduras reveals that the principal reasons (as stated by teachers) are found in the precarious economic situation of campesinos. This usually means that the parents are unable to feed or clothe their children and buy the few school materials that are required. Also, for parents who are living at the very edge of survival, keeping the child at home to contribute to the family economy by doing odd jobs or working in the fields seems more important than formal education. Sickness, which was given as the second most important reason for dropouts, is also related to the precarious economic situation. Thus, the annual growth rate of primary-school enrollment in the largely rural areas of southern Honduras is only 5.5 percent, not much beyond the population growth rate of approximately 3 to 3.5 percent. 36/

Since the level of literate skill is directly related to number of years completed in the public primary school, the longer the

parents are able to keep the child in school, the greater the literacy skills. 37/

The analysis of the data from the survey of 613 campesinos clearly corroborates the descriptive study of rural communities and the secondary data. 38/ The most important factor directly influencing the grade-level achievement of children of campesino background is the parents' aspirations for their children's education, that is, how much education they are planning in the present circumstances to give to their children. However, the major factor in parents' aspirations is their degree of centrality in the communication network of the community which supports the proposition that parents who occupy positions of greater influence in the community and are in an intermediary position between the urban-technical and campesino sectors have greater aspirations for their children's education and seek to give their children the education which will enable them to be truly literate. The second most important factor in children's grade-level achievement proved to be, as predicted, the socio-economic status of parents, measured in terms of productive wealth or land holdings. Thus it is a combination of influential position and economic resources which motivates and, at the same time, enables parents to keep children in school longer.

One might expect the formal education of parents to influence their aspirations for their children and be directly related to children's grade level achievement, but, in the rural Honduran context, higher education levels in parents are a relatively minor and indirect influence on children's educational achievement. Formal education is a factor in the parents' centrality in the community; that is, adults of higher educational background tend to hold more influential positions in the community, and their parents before them probably secured them this education because they were more influential in the community. But the formal education of parents is more directly a factor in children's achievements when it is combined with centrality and, especially, with land ownership. But, in rural Honduras, those who have more land tend to be older persons whose land holdings are less fractionated, and older persons have had less opportunity for education twenty or thirty years ago when schools were less common in rural areas.

The importance of a combination of centrality and economic resources explains, in part, why the greater participation of parents in the PPM, a movement which has emphasized education and, according to the data in this study, has moved its members into positions of greater community centrality, is not an influencial factor in greater aspirations and actual achievements in their children's education. The PPM active followers and leaders tend to come from a lower economic status and have units of land smaller than the average in rural communities. If they have arrived at a position of greater community influence, it is in opposition to the traditional elites of these communities and without the help of economic resources. PPM participants, through their entering into a series of community organizations which the PPM itself has

created, are "recently arrived" and, as will be noted in greater detail below, have not been able so far to translate this mobilization into concrete economic benefits; indeed, some PPM leaders feel that they have suffered economically because of the sacrifice of time volunteered to the PPM activities. It is possible that, in time, if PPM participants consolidate their community power, they will develop higher educational aspirations for their children. But the translation of aspirations into higher grade-level achievement of children will also depend on PPM participants improving their economic situation, something that the PPM had not strongly emphasized in the period before 1972.

A further factor is the fundamental conflict which has existed between the PPM and the institution of the rural primary school. The emphasis of the PPM has not been individual upward mobility out of the community through the rural school, but greater campesino solidarity within the community. The rural schools in the municipalities of Honduras have often been dominated by traditional politicians who appoint rural teachers sympathetic to their political views. Since the rural primary school teachers owe their jobs to the rural elites, they often have held themselves aloof from the PPM, and the PPM leadership often demonstrates little sympathy or interest in the rural school system. It is likely that PPM participants do not see their aspirations for their children realized in the rural school system as it is now constituted.

In brief, the first proposition advanced above, "that individuals in rural communities of Honduras who have greater aspirations for and actual achievements in literacy and other educational skills," is supported by the descriptive analysis of social structure, by secondary data, and by the statistical analysis of data from the survey of 613 campesinos in southern Honduras. The evidence clearly indicates that basic education skills are associated with roles which combine social and economic power in rural communities and that if individuals think that they or their children could or should occupy these roles, they will obtain the skills these roles demand.

This also explains why many campesinos who have learned to pronounce or write printed symbols mechanically through the public primary schools or the radio schools often quickly lose these skills. They do not occupy roles which demand the use of the skills and therefore they cannot grow in these skills. Most campesinos, because they are closed off from roles that are in contact with the urban-technical sector, are not familiar with the conceptual and language universe of that sector. Even if they learn the words or certain skills, these have little significance in the life situation of the campesino.

However, the evidence regarding the second proposition that "lower-status campesino families, by participating in the PPM, have moved to positions of greater centrality and economic power and, subsequently, have developed both aspirations for education and literate

skill" is equivocal. Although PPM participants have increased their centrality in the community decision-making process this has not begun to be reflected in greater educational aspirations for their children. The deep-seated populist ambivalence of the PPM regarding the rural school system as an institution dominated by traditional politicians and staffed by urban-oriented teachers may be somewhat justified. But there is also evidence that the PPM, in emphasizing community development and various community organization, has neglected the more basic problems and focal concerns of campesinos: improved health, child care, and nutritional aspects of the woman's role and, especially, improved technology in the man's role in agricultural production. If the "institution of literacy" is to become a part of the roles of the campesino, it is precisely in the activities as homemaker and agriculturalist that the most basic changes must come. The PPM did introduce health and agriculture into the radio-school course and the close collaboration with the women's homemaker clubs, the credit union cooperatives, and centers of agricultural services was intended to introduce more modern health and agricultural practices. How successful the PPM has been in this regard is considered in the following section.

2.8 The Effectiveness of the Agriculture and Health Education Programs of the PPM

In addition to the daily literacy classes, radio schools of ACPH have had two or three classes a week in each of the areas of health, agriculture, and civics, and texts and charts are distributed to accompany these classes. These classes were backed up with "campaigns" through the radio broadcasts and through the radio-school coordinators in monthly meetings and visits to communities. The campaigns attempted to introduce simple preventive health practices, such as boiling water or building latrines, or agricultural practices such as compost piles for fertilizer and a series of other yield-increasing recommendations. After 1967 the radio schools promoted the woman's homemaker's clubs (Clubes de Amas de Casa) with a regional supervisory system and a daily radio program which systematically worked to improve health, nutrition, and the women's involvement in community activities. The Center for Agricultural Services in the southern region of Honduras also attempted to support the radio schools, but it was serving no more than a half-dozen scattered production cooperatives in 1971.

This evaluation of the health and agricultural efforts of the PPM returns to the two questions underlying this study:

1. Did the radio schools and other PPM activities achieve and practice objectives of raising the health and agricultural knowledge of its participants to levels significantly above those of the general campesino population?

2. To what extent and under what conditions have PPM participants found the agricultural and health information "useful" so that they were able to translate this knowledge into actual implementation of practices?

To measure agricultural and health knowledge, a series of questions reflecting the major emphasis of the radio-school health and agricultural classes were selected: in the health area, four questions concerning knowledge of food, nutrition, and child care; in agriculture, four questions concerning knowledge of soil conservation, fertilizers, insecticides, and new corn varieties. The questions regarding actual implementation were based on the practices which had been recommended in the radio-school classes, the campaigns, or the homemakers' clubs; in the health care area, preventive and hygenic practices, such as boiling water and keeping farm animals out of living quarters, prenatal care and vaccination of children in the agricultural area, the use of fertilizers, improved livestock breeds, new seed varieties, insecticides, and vaccination of livestock.

These questions were included in the questionnaire applied to the sample of 613 in thirteen PPM and non-PPM communities. Since in rural areas family health is primarily the concern of the women and agriculture primarily the concern of the men, the health questions were directed to women and the agricultural questions to the men. In the case of the women, data from interviews with mothers are reported since questions regarding child care would be relevant only for them.

Although the radio-school classes are one of the principal sources of information on agriculture and health, the PPM provides a series of communication linkages of which the radio schools are only one part, and it was expected that the level of information and practice would be higher with greater centrality of access to the various PPM linkage systems. Therefore, the analysis was based on the comparison of the mean scores of PPM leaders, PPM active participants, non-participants in PPM communitites, and <u>campesinos</u> in non-PPM or control communities.

These data show that men participating in the PPM have a significantly higher level of agricultural information than men in the sample of non-PPM communities and the greater the level of participation or centrality, the greater the information. In the actual implementation of recommended agricultural practices, men in the PPM, except for the key community leaders, had scores significantly lower than men in the non-PPM communities. However, the women participating in the PPM not only had higher levels of health knowledge than women in non-PPM communities but a significantly higher implementation of health practices as well. The question arises, "Why should the knowledge-practice discrepancy, already noted in the analysis of the PPM literacy program,

be true of the men in agricultural knowledge and implementation, but not of the women in the case of health knowledge and practice? One explanation appeared to be that the PPM had more than 600 homemakers' clubs in 1971, and many of the women in the sample of PPM participants were active in these. The homemakers' clubs provided the support of a local organization concentrating on implementation, a series of courses for women in health and nutrition, a daily radio program for women answering letters and responding to concrete problems, and supervisors visting the clubs in the communities. Some clubs also maintained emergency health loan funds and a community medicine chest.

To explore more deeply the factors influencing the implementation of health but not agricultural practices in the PPM, an explanatory model was designed and path analytic techniques were employed to test this model.

In the case of agricultural practices, it was found that land ownership was one of the most important factors, but PPM participants, especially the radio-school students who are younger and whose family plots are increasingly subdivided with each generation, have smaller than average land units or no land at all. Present land rental conditions are too insecure to warrant an increased investment in yield-increasing practices. A second important factor was frequency of contact with the regional market city since the sources of credit, technical assistance and yield increasing inputs such as fertilizers and insecticides were obtained, generally, in the regional city. As was noted in Part I, frequency of trips to the regional market center are related to a combination of economic resources and a higher level of formal education and ability to deal with an urban context. Except for the central leaders of the PPM, radio-school students and many other participants in the PPM do not have frequent contact with the regional city. A third factor was credit, but adequate credit and good marketing conditions necessary for repaying loans were not available to PPM participants in the period from 1960 to 1971, in part because the credit-union cooperatives were not accumulating sufficient capital for production credit and made no provisions for marketing. Agricultural knowledge was a factor, though a less important one, but the information supplied by the radio schools in the period before 1971 tended to be quite theoretical knowledge about fertilizers, soils, and insecticides, which was not directly applicable in the steep slopes, rocky soils, and other difficult conditions of the semi-subsistence highland farmer. Thus, even though radio-school students and other PPM participants had superior agricultural knowledge and a great deal of motivation, it was generally not possible to implement recommended practices.

The analysis of the factors influencing adoption of health practices among the women in the PPM revealed that participation in the rural home-makers' clubs, as expected, is significant. However, women of higher socio-economic status tended to be much more active in the

homemakers' clubs and to have higher levels of health knowledge. It is not surprising that women from families with large land units and greater economic and food resources would be inclined to be more concerned with nutrition and other forms of preventative medicine than women of lower-status families, who are more concerned simply with having enough to eat--of any kind of food.

However, the most accurate predictor of higher levels of implementation of recommended health practices was the number of years of enrollment in the radio schools. More accurately, the women in the PPM most likely to have better health practices are radio-school students who are also members of the homemakers' clubs. Information from the descriptive observation of the general program of the PPM and its relationship with other agencies functioning in southern Honduras helps to understand why the radio schools have been effective in the case of health practices. First, the campaigns of the radio schools, in conjunction with the homemakers' clubs, have emphasized preventative practices that are within the reach of most socio-economic statuses and do not require any credit support or more sophisticated technical knowledge as do yield-increasing agricultural inputs. Secondly, the presence of the health centers in the rural central-place towns and the occasional visits of vaccination brigades from the regional hospital supported the radio-school and homemaker-club efforts and made vaccination and prenatal care more feasible. Thirdly, the homemakers' clubs have encouraged the direct implementation of health practices by creating a social force in the community motivating women to implement health practices by maintaining a supervisory and technical assistance system directed toward solving the concrete problems of rural women, and, in some cases, by providing credit, medicines, and other supplies in the local community.

2.9 Conclusions Regarding the PPM Agriculture and Health Education Programs

The analysis of these data regarding the health and agricultural education program leads to conclusions similar to those arrived at in the analysis of the literacy program: The PPM has been able to communicate certain knowledge skills to campesinos, but these are not generally functional in the lives of the lower-status, highland campesino because these knowledge skills have not been accompanied by access to basic economic resources, especially land in the case of agriculture, and access to internal and external communication linkages through which credit, technical assistance, and marketing opportunities are made available.

In the implementation of both agricultural and health practices, land ownership is an important causal factor. External centrality--contact with the regional market city--is an important factor in agricultural practices, and the homemakers' clubs were significant in

health practices as a linkage system reaching into rural communities. As in the case of literacy, those persons in the community who have economic resources and occupy positions of greater internal or external centrality are much more likely to be aware of new alternatives in health and agriculture and to be able to consider seriously putting them into practice.

The PPM was generally aware of these problems and saw as the only long-range solution concientisation and campesino organization. More short-range solutions, such as the credit-union cooperatives introduced by the PPM. have a widespread basis among lower-status PPM participants, but these were unable to accumulate sufficient capital for production credit. The Center for Agricultural Services followed the traditional method of intensive, highly technical projects in a few farmer cooperatives directly supervised by professional agronomists. Attempts to encourage the official agricultural extension agency, DESARRURAL, to use the mass communication system of the PPM were not successful. There is little evidence that before 1971 the PPM was able to change significantly the pattern of economic dependency in rural communities.

A partial exception to this appears to have been the work of the PPM in introducing simple health practices, through radio schools and the homemakers' clubs. While the male participants in the PPM had quite superior agricultural knowledge, but were not translating this into practice, the women had both superior knowledge and practice. It would be incorrect to say that the PPM introduced radical changes in the health, nutrition, and child-care practices of the women, given the continuing poverty and the limited resources available, but it is worthwhile summarizing the reasons for the mild successes in health education and the innovative communication methods used especially in the case of the homemakers' clubs.

1. The Adaptation of Information to the Level of the Campesino.

   Whereas the agricultural education materials were often quite theoretical and, at best, directly usable only by larger, commercial farmers, the health information attempted to communicate simpler practices which were direct responses to lower-status campesinos' needs and could be implemented with resources that were generally available or were available through the homemaker's clubs.

2. A Widespread Local Community Organization.

   While the agricultural extension services tended to work with individual farmers, the homemakers' clubs

grouped together the women in the community to discuss common problems, initiate community-wide campaigns (a type of social pressure), and obtain resources as a group. This served as an internal communication network among the women and the local officers were a communication linkage with outside sources of information. For example, periodic courses were given to representatives of the women's clubs who returned to spread recommended practices in the community.

3. The Use of Paraprofessional Personnel.

The homemakers' clubs initiated a series of standard "projects" such as boiling water, starting small savings clubs for health emergencies, and community medicine chests which campesino paraprofessionals were able to supervise. Thus, while the Center of Agricultural Services tended to work intensively through professionals with less than ten groups, the homemakers' clubs, with fewer costs, supervised and promoted more than 300 groups in southern Honduras alone.

4. A Resource Delivery System Reaching into Rural Communities.

Whereas most external agricultural resources were available only in the regional market city, small health centers in rural central places, occasional "vaccination brigades", and malaria control programs made limited medical services locally available. The homemakers' clubs served as a distribution system for powdered milk and some medicines or encouraged women to take advantage of available services.

5. The Regional Radio Station as Dialogue.

The agricultural information available through the radio was prepared and directed to a general audience. The homemakers' clubs developed a regionally-based daily program that was directed to specific projects and problems of the clubs. Letters to the program from the clubs were discussed, the supervisor reported on innovative projects of a particular women's group or tape-recorded visits to communities, leaders of particular groups came into the station to speak to all of the clubs, and so forth. The radio was thus a horizontal and vertical dialogue between participants.

2.10 Summary and Conclusions of Part II

The summary analysis of the results of this first general objective of the PPM in Honduras, an adult basic education program, is that ACPH, working ing through the PPM, has at least provided the opportunity for literacy for some campesinos, and the new or improved literate capacities of some lower-status campesions has enabled them to move into leadership positions that the PPM itself has created. It has also increased the health and agriculture information of its participants. If few of the radio-school students and other PPM participants are employing the literacy skills and health and agricultural information in their daily lives, this appears to be a function of: (1) the general situation of poverty and socio-economic dependency of campesinos; (2) the continuing exclusion of campesinos from roles which would both demand and permit the use of these skills; and (3) the failure of the program of ACPH to bridge the gap between information and implementation by changing the type of information that is communicated, by integrating the communication of knowledge skills with a resource delivery and organizational system in the area of literacy and agriculture, and by a very close collaboration with the general educational, health, and agricultural development programs of the central government. The innovative use of communication linkages by the homemakers' clubs offers a model of an implementation system reaching into rural communities, and partially explains the limited successes of the PPM in the area of health practices among the women.

All of the evidence presented in Part II of this study indicates that literacy and other adult basic education skills are important if the campesino wishes to increase access to available development alternatives, but they are best interpreted as an effect not a cause of socio-economic structural changes. Basic education programs whether through radio schools, public primary schools, direct teaching, or other methods will have little success unless the hierarchical, dichotomous structure of Honduras is quite radically modified. Even should campesinos learn to interpret and use the written symbols and should they become aware of the knowledge of the urban-technical tradition, unless they develop an independent base of political, economic, and technical power, these are unrelated to their life context.

The directors of ACPH and the leaders of the PPM began to be increasingly aware of these hard realities quite early, and they therefore gave the highest priority to stimulating a series of change-oriented attitudes and values--what was later called concientization--and preparing the basis for fundamental changes in the power relation between the campesino and representatives of the urban-technical elites at the local, regional, and national level. How successful the PPM has been in these other objectives will be considered in Part III.

3. THE EFFECTIVENESS OF THE PPM MULTI-STAGE RURAL DEVELOPMENT MODEL: CONCIENTISATION, ORGANIZATIONAL CAPACITY, AND CAPACITY FOR INTEREST-GROUP ACTION

The longer-range objectives of the PPM--the development of an independent organizational structure in rural communities whereby campesinos could themselves collectively define their needs, have communication linkages for obtaining services and resources, and mobilize to influence the regional and national decision-making--were seen as the work of a series of stages, each of which was an objective in itself:

(1) Through various forms of adult education, bring about a growing awareness (concientisation) of the socio-cultural, economic and political inequalities between the rural and urban sectors and the conviction that if campesinos would organize they would no longer need to depend on paternalistic patrons, but could overcome problems through their own leadership.

(2) This "concientisation" was expected to lead to participation in a series of local community organizations, a willingness for aggressive, dedicated leadership in these, and the ability to manage them.

(3) Finally, through experience in problem-solving at the local level, campesinos would grow in their knowledge of and ability to deal with the wider governmental and economic structure of the country.

In the concrete circumstances of the PPM, these three stages or objectives were never so clear-cut, and the move to a subsequent stage was, at times, simply the reaction to a new opportunity, a change in government policy, or some crisis in the organization. However, Part III will analyze this multi-stage model of the PPM in terms of the two basic questions guiding this study:

(1) How effective has the PPM been in realizing its objectives of concientisation, organizational capacity, and capacity for interest-group action?

(2) If PPM participants do have superior capacities for collective problem-solving, what observable improvements in rural communities have come from this and what indications are there that the PPM is contributing to more successful campesino interest-group action?

3.1 Establishing Measures of Concientisation, Organizational Capacity and Capacity for Interest-Group Action

Since the term "concientisation" has such a varied meaning according to the context, the first step in deriving measures of the dimensions of concientisation according to the PPM was an analysis of the content of radio-school classes, the leadership-training courses, the talks of PPM leaders in monthly meetings, and finally exploratory interviews with PPM participants. These attitude and value dimensions were then defined, whenever possible, in terms of broader theoretical definitions for which measures had already been devised and tested in studies among Latin American campesino groups.39/ Thus, the value dimensions would not only measure more specifically what the PPM was trying to achieve, but would have greater validity among all Honduran campesinos.

On the basis of this exploratory study, a series of questions were derived which were included in the questionnaire applied in the interviews of 613 campesinos and which formed five scales 40/ measuring dimensions of concientisation as this was carried out by the PPM:

1. Awareness of alternatives, a composite measure based on:

   a) the general awareness that the community has problems;

   b) the number of community problems the respondent could name; and

   c) the ability to suggest concrete steps for solving problems in seven areas: health, agricultural yields, farm-to-market roads, primary-school education, municipal government, agricultural credit, and better agricultural technical assistance.

2. Activism (the opposite of fatalism), the belief that it is not necessary to accept events as one's fate passively but that it is possible to control outcomes by one's intelligence and hard work. A special emphasis in the PPM is communal activism, the belief that "if the campesino organizes, it is possible to overcome problems".

3. Social solidarity or trust in people, the belief that others, have sufficient regard for one's own well-being so that it is generally possible to cooperate with them and rely on them for assistance and for just, considerate treatment.

4. Social independence, the belief that campesinos do not need to depend on a powerful intermediary because of lack of education or the frequent crises of poverty, but are capable of speaking and acting for themselves.

5. The perception of marginality dimension measures the awareness that the campesino, in comparison with the urban-technical sector, does not share equitably in the wealth of the country, is not adequately served by the Government, and does not have the opportunity to influence national decision-making. 41/

Two dimensions of organizational capacity are included in this analysis of Part III:

1. Aggressive leadership is measured by the frequency of attendance at meetings, expressed willingness to serve as an officer of an organization, and the perception of oneself as the organizer, not the follower, in community projects.

2. Capacity for organizational management is measured by the ability to describe, according to accepted criteria, the functions of officers in typical organizations and the method of holding elections in an organization.

In the present analysis of the PPM, participants are compared with non-participants on three major types of interest-group activities common in rural communities:

1. Political efficacy, the knowledge of what governmental office or private agency is appropriate for solving specific community problems such as the problem of the local school teacher, and the ability to use these bureauratic agencies for the benefit of the community;

2. Knowledge of political-governmental institutions, the ability to name the local alcalde (mayor), the provincial governor, the diputados (representatives) from the area in the national congress, and cabinet ministries and the persons then heading those ministries.

3. Participation in campesino pressure-group organizations or at least the desire to participate.

3.2 PPM Participants Compared with Other Campesinos on Dimensions of Concientisation, Organizational Capacity and Capacity for Interest-Group Action

In order to test the effectiveness of the PPM in its efforts in concientisation, organizational capacity, and capacity for interest-group action, the mean scores of PPM participants on the measures defined above were compared with non-PPM control groups at three different levels:

1. The community level. Since the PPM sought to introduce a structure of organizations and leadership which would influence in some degree the attitudes and capacities of all in the community, it was expected that in communities where the PPM organizations and linkage structure were strong (high PPM), the mean scores on the different measures would be higher than where the structure was weak (low PPM), and very significantly higher than mean scores of individuals in communities where there was no PPM structure (non-PPM).

2. The PPM Subgroup. It was expected that the core subgroup of active PPM participants in a PPM community would have higher mean scores than non-participating individuals in a PPM community, but that the latter would be higher than individuals in non-PPM communities because of the indirect "structural" effects of PPM organizations and cultural norms.

3. Leaders and Followers Within the PPM Subgroup. In all of the rural communities studied, but especially within the group of active PPM participants, there tends to be a structure of one or two key leaders, the immediate circle of collaborating leaders around these key leaders, the active followers in community projects and organizations, and those who are marginal to all community activities. It was expected that the higher the level of central access to communication linkages in PPM communities (leaders), the higher the scores in concientisation, organizational capacity, and interest-group orientation, but that PPM key leaders, collaborating leaders, and active followers would be significantly higher than non-PPM participants at corresponding levels of community centrality.

The global comparison of the mean scores of high-and-low-PPM communities with non-PPM communities on the dimensions of concientisation, organizational capacity, and capacity for interest group action shows the mean scores in PPM communities to be significantly higher on

all of the dimensions. Even in low-PPM communities where the impact of the movement was relatively weak, the mean scores were higher. A major factor in this is the stress of the PPM on a series of organizations responding to the interests of a wide cross-section of the community, the spread of leadership positions and participation in community decision-making, and the insistence that the principal objective is not the physial construction of a school, for example, but developing new attitudes of campesino solidarity and activism. Although some of the non-PPM communities had a considerable degree of community activity, the leadership tended to be concentrated in a few, authoritarian leaders, and, in some cases, dominated by traditional patrons so that widespread attitudinal change was less likely.

A more crucial test of the effectiveness of the PPM strategy is the comparison of different levels of community centrality--key leaders, collaborating leaders, active followers and marginals--in three different structural contexts: non-PPM communities, the non-participants in PPM communities, and the active subgroup of PPM participants in PPM communities. It is possible that simply occupying positions of greater centrality as active participants or leaders with greater exposure to communication networks is a sufficient factor in attitude change and organizational capacity. Also, leaders and other more central individuals tend to have higher socio-economic status and educational backgrounds which could explain higher scores on these measures. 42/ One must ask whether activists and leaders in the PPM have significantly higher levels of these characteristics than individuals of the same level of centrality in the non-participant group in PPM communities and especially in non-PPM communities.

The analysis of the results of these comparisons shows that on the four measures of concientisation--awareness of alternatives, activism, social independence and trust in people--the higher the level of community centrality (leaders as opposed to followers and marginals), the higher the mean scores on all the measures of concientisation in both PPM and non-PPM groups, indicating that community centrality is a factor. However, the comparison of each level of centrality shows that leaders in the PPM subgroup have higher mean scores than leaders in the non-participants in PPM communities and strikingly higher scores than leaders in non-PPM communities. Followers in the PPM subgroup are not only higher than followers in the group of non-participants in PPM communities and in the non-PPM communities, but are higher than leaders in the non-PPM communities.

Although the leaders and active followers in the PPM communities who are not participants in the "movement" tend to have lower levels of concientisation than the core PPM subgroup, they are still significantly higher than leaders and followers in the non-PPM communities. This supports the conclusion that the presence of the PPM organizations and activities has a "structural effect" influencing the attitudes and values of individuals not directly participating.

Moving to the comparison of PPM and non-PPM leaders and followers in organizational capacity, the analysis shows that both participating and non-participating individuals in PPM communities are significantly higher in aggressive leadership than individuals of the same level of centrality in non-PPM communities. However, in the measure of more instrumental skills of organizational management, PPM leaders are not significantly higher. This supports the observation that the PPM has tended to take over many traditional collective decision-making institutions in rural communities, such as the patronato (a type of project directorate) and, although there was greater participation and more activity, the PPM did not manage the patronato very much differently than other campesinos in Honduras. In the study of the two campesino interest-group federations, the ANACH (Asociacion Nacional de Campesinos de Honduras) and the UNC (Union Nacional de Campesinos), the latter drawing much of its leadership from the PPM, the only significant difference in the way the UNC directed its organization was the greater insistence on participatory, "democratic" leadership.

Finally, in the measures of political knowledge and political efficacy, leaders and followers in the PPM subgroup tend to be somewhat higher than non-PPM participants, but not significantly so. Political knowledge and efficacy appear to be related more to education and urbanization, and, at the time of this study, PPM participants, largely of lower-status rural background, had not broadened their perception of the national political campesino leadership for effective campesino pressure-group activity, the PPM does seem to have been influential since PPM leaders and followers tend to have much stronger interest in joining the campesino federations and actually do participate more.

Summarizing, the PPM appears to have been decidedly more successful in this high priority area of concientisation and training for rural organization than in the literacy campaign. The differentiation of Honduran campesinos in the PPM from the non-participants appears to be strongest in the area of attitudinal and value changes--especially in communal solidarity and activism--but less marked in more overt behavioral dimensions such as the capacity to administer rural organizations. In the capacity for interest-group action, PPM participants have a strong orientation toward more radical campesino pressure-group action, but were not notably more capable than non-participants in understanding the structure of the national political-economic system.

However, one must ask if the pattern found in the analysis of the adult education programs--significant changes at the cognitive and evaluative symbolic level, but severe obstacles met in translating this into action--is again repeated in these other objectives. This point will be taken up in discussing the second question: the relevance of these capacities in campesino life.

3.3 The Significance of Concientisation, Organizational Capacity, and Interest-Group Orientation in Improving Socio-Economic Conditions in Rural Communities

At the time of this evaluation there were three major processes of social, economic, and political changes which were widespread in the highland areas of southern Honduras and that reflected national trends: 43/ 1) The development of local leadership and organizational structure to carry out community development projects; 2) pressure to make political and governmental structures not just a patronage system but an instrument of development; and most important, 3) the land occupations and mobilization of campesinos in interest-group federations. One criterion of the practical significance of the PPM is its contribution to these three trends.

The institution of forming a local committee to carry out community projects, the patronato, especially in connection with religious fiestas and the construction and maintenance of small neighborhood churches, but also building schools and maintaining roads, has a long history in Honduras. However, the availability of funds from government and international agency sources gave a great impetus to this activity specifically in the area of schools, piping clean water to communities, and roads. This was accomplished by emphasis on principles of community development. The PPM also encouraged its leaders to organize patronatos as one part of the network of local organizational capacity, and the construction of community infrastructure was one of the principal activities of the PPM from 1964 to 1971.

As a test of whether the communities where the PFM has been active actually do show a greater incidence of construction of community projects, data on the number of projects completed in the last eight years and the presence of cooperatives were selected from the survey in a random sample of 115 communities from a universe of all communities in the Department of Choluteca. Since data were also collected on presence or absence of the PPM in the community and the degree of functioning of the PPM, it was possible to rate communities according to five levels of functioning: 1) PPM never present; 2) PPM functioning poorly or inactive; 3) PPM functioning at an average, acceptable level; 4) PPM functioning well; 5) PPM functioning at an outstanding manner.

Nearly all of the 115 communities had completed at least one project in the eight years before this survey (1964 to 1971) including 86.2 percent of the non-PPM communities. The percentage of communities with two projects is only 10.3 for non-PPM communities, but this jumps to 41.1 where the PPM is at least present and to 75 percent where the PPM is functioning well. Virtually no non-PPM communities had three projects (only 3.4 percent) and where the PPM is functioning poorly or just average the percentage with three projects does not rise above 20 percent. However, 30 percent of the communities with PPM functioning well and 50 percent of the outstanding PPM communities had three

projects. Thus, clearly, the PPM with its project linkage system channeling petitions for funds and supervising projects did speed up the tempo of construction of schools, roads, and small water systems in rural communities.

The incidence of small consumer and production cooperatives also tends to be greater in the PPM communities. There were no consumer cooperatives in non-PPM communities but 30 percent of the communities with PPM functioning well and 83.3 percent of the outstanding PPM communities had consumer cooperatives. Approximately one-third of the communities where the PPM was functioning well or outstanding had production cooperatives.

There was widespread dissatisfaction in rural areas of Honduras in the late 1960's with the partonage politics and the repression of opposition parties by the dominant Nationalist Party. The PPM generally avoided direct involvement in party politics, but PPM leaders constantly condemned traditional politics because it fanned rancorous conflict in communities, destroying the community solidarity and distracting campesinos from real conflict issues, namely, socio-economic dependency. The Nationalist Party machine was increasingly suspicious of the rising PPM organization in southern Honduras, and local party bosses did what they could to harass PPM leaders, giving no encouragement to the radio schools. What incensed many PPM leaders was that the traditional political parties used the machinery of local municipal government not to contribute to development but to reward their friends, many of them among the rural elites. PPM leaders felt that they were doing far more for improving conditions in their areas, but could get no help from the official governmental structure. In many municipalities, individuals engaging in community projects, which were connected with local political bosses, were excused from paying municipal taxes, while PPM participants, who felt they did far more, could get no such dispensations.

In the 1971 municipal elections the PPM mobilized in at least three municipalities in southern Honduras to elect their own "citizens' candidates". Although the Nationalist Party permitted no such "independent candidates", the PPM brought pressure on the Nationalist Party to accept PPM candidates for municipal government. Thus, in the areas where the PPM was particularly strong, they were able to gain a substantial voice in municipal government and to influence reforms in the municipal government. The involvement in community development had brought the PPM leaders to challenge traditional municipal politics, but, once in the municipal government, they soon saw that they could do little unless they had a sympathetic national government policy. Nevertheless, the PPM did contribute to the very practical political education of many campesinos.

The analysis of the role of the PPM in the land occupations and campesino organizations in southern Honduras is of special importance because it was perhaps the major factor in changing power relations and represented a central theme in PPM strategy.

The first groups of campesinos to begin protesting eviction from national or ejidal land in an organized way were in the coastal communities, in the wake of expanding cotton and cattle haciendas. In 1963 the newly formed National Agrarian Institute (INA) entered the growing conflict over land and established several colonization projects in southern Honduras, but after the rightist-oriented coup d'etat of late 1963, there followed five years of repression and collusion--even of INA--with large landowners.

In 1964, activists from the Honduran Christian Social Movement entered southern Honduras to form campesino leagues on the basis of PPM leadership. But the harassment by local political bosses discouraged most of them, and the campesino leagues opted simply to support the mild community development activities of the PPM.

Meanwhile, some groups of campesinos continued petitioning INA to adjudicate land disputes, and in 1968 the ANACH, rival to the campesino leagues, entered southern Honduras to affiliate the scattered groups of evicted and landless campesinos and to plan land occupations as a pressure tactic. When the campesino leagues saw the ANACH organizing in the heartland of the PPM, they began to prepare for much more aggressive action. From May to August, 1969 both the ANACH and the campesino leagues launched land occupations. The government, now influenced by the demands of the north coast banana company trade unions and by Rigoberto Sandoval, director of INA, who was sympathetic to campesino requests, responded to the occupations with land distribution. When campesinos saw they could get land by forming local units of federations, there was rapid growth of both campesino federations in southern Honduras.

There is little evidence that the PPM activities in radio schools, community development, and cooperatives directly influenced the PPM leaders in the campesino leagues to enter a more aggressive phase. The basic motivation did not come from PPM leadership training courses but from the increasing difficulty in finding land for subsistence agriculture in the areas of the expanding haciendas. Initially, the central office of ACPH asked radio-school coordinators to avoid leadership in land occupations because of possible political complications, and many of the rural pastors were apprehensive of "violence". Eventually ACPH and many of the highland campesinos involved in the PPM did support the idea of land occupations, but since in the highlands large landholders were often relatives or neighbors and the land problem was one of slow fractionation among heirs, land occupations did not occur to many PPM leaders as a solution. There is still no strong move to form pressure-group organization in these areas.

To summarize, after 1971 the PPM in many regions adopted as its basic structure aggressive campesino leagues, and the radio schools and other activities were influenced by this. But in southern Honduras the long emphasis on the particular model of radio schools, community development, and credit-union cooperatives may have been as much a hindrance to aggressive tactics as a preparation because it reinforced community localism and diverted energies from a mass organization. At best the PPM in southern Honduras provided a communication network that the campesino leagues could use to contact groups potentially interested in affiliating to the federation.

3.5 Summary and Conclusions of Part III

The priority that ACPH and the PPM gave to developing social-change values and a collective problem-solving structure in rural communities of Honduras is reflected in the considerable success achieved in this from 1961 to 1971, in spite of limitations in the approach.

1. Creating the Basis for a New Campesino Culture

The PPM developed in its participants, especially its leaders, an unusual dedication to communal activities and to values of communal activism which sharply contrasted with the individualistic activism flowing from the influence of modernization in many rural communities. The PPM has stimulated the growth of a sense of social power and campesino class solidarity that provides the basis for a type of Populist "re-evaluation" of the campesino and for eliminating the depreciative self-image that a hierarchical dichotomous society imposes. The process of "concientisation" tends to influence a change of values so that every participant is potentially a convinced leader and there are candidates for paraprofessional supervisors who are dedicated to the campesino class and desirous of working in rural areas--not simply using the position for upward mobility out of the campesino class.

However, the PPM emphasis on values and motivation often is a type of voluntarism--"if one tries hard enough, it is possible to resolve problems"--that is typical of popular promotion strategies throughout Latin America. 44/ After 1971 the PPM has focused much more clearly on the problems of economic dependency and the need for resource-delivery systems integrated with its concientisation, but the emphasis on value changes, motivation, and organization without a closely parallel system of resources--credit, technical assistance, and marketing opportunities--tended to lead to frustration and a certain waste of energy. In the hands of some PPM leaders concientisation appeared to be more of a demagogic indoctrination and did not cause a deeper analysis of concrete dependency structures and the lack of resources with which to improve productivity.

Specific dimensions of awareness and values in the PPM appear to be related to specific programs and organizations and the PPM ideology is more "integral" because it has invited a series of parallel organizations to participate. However, to be even more concrete, "concientisation" should descent to the focal concerns of campesino life: agriculture, health, and exploitation by larger farmers of the neighborhood. Without a solid basis for increasing agricultural productivity and raising incomes on the basis of effective credit, technical assistance, and marketing, it is impossible to speak of a sense of social power and a revitalized rural culture. Unless there is effective economic and political power, fatalism is perhaps more realistic than a wishful activism.

2. Developing Participatory Collective Decision-Making Structures

The PPM has reinforced traditional decision-making institutions such as the patronato and, through non-directive techniques of concientisation and animation, has influenced the growth of participatory decision-making. The PPM network of organizations is a base for articulation of campesino interests, and the system of monthly meetings and paraprofessionals provide communication channels for information and resources to remote communities. The PPM emphasis on cooperatives has been an important gradual learning experience for the transition from the individualistic minifundio type of agriculture toward collective forms of production and marketing.

In the period from 1964 to 1971 the PPM, focused its organizational efforts primarily on construction of community infrastructure, in part because there were funds available; but, in spite of great amounts of volunteer labor, this produced little real economic benefit for lower-status campesinos. Moreover, community development councils have not provided the kind of administrative training that campesinos need to direct production cooperatives and supply and marketing cooperatives. PPM, participants have been deficient in the administrative capacities they need if they are to compete with the rural elites.

3. Developing a Base for Interest-Group Action

Through the experience of trying to obtain resources for local projects, PPM participants gained greater knowledge of the governmental and political structures and efficacy in using them for campesino benefit. However, PPM, participants generally tend to be locally oriented and have little conception of the role of campesinos in the national social and political system. Also, the rather mild "community development" emphasis of the PPM in southern Honduras did not really prepare campesinos for a further stage of aggressive interest-group action. The radio schools and certain "concientising" tended to be defined in terms of problems that middle-class technicians thought were important, not the real problems of land tenure and

economic dependency. Unless adult education and various conciențising activities are integrated around fundamental problems of lower-status campesinos from the onset, and campesinos --not middle-class, urban-based directors--define activities, it is doubtful that these will lead to effective power changes in rural areas.

On the whole, the PPM appears to have provided a motivational and organizational base of remarkable potential for development among highland campesinos in Honduras, but, at least in the period from 1961 to 1971, this was not being sufficiently utilized. In the conclusions, I will indicate how, after 1971, the PPM developed in new directions.

4. CONCLUSIONS: THE POTENTIAL CONTRIBUTION OF THE POPULAR PROMOTION STRATEGY TO RURAL DEVELOPMENT IN HONDURAS

The present chapter has attempted to evaluate two major dimemsions of the Popular Promotion strategy of rural development in Honduras--the adult basic education program (literacy, health, and agriculture) and the efforts in concientisation and campesino organization--in terms of achievement of immediate objectives and, more important, the relevance of these capacities in the life of the campesino. However, I have stated the intention of returning, in the conclusions, to a third question: "What are the innovations (or lessons) of the PPM in rural development and what is the actual or potential contribution of the PPM to development among rural, lower-status groups in Honduras?" The discussion of this question is, perhaps, the best summary of the results of the evaluation.

The criteria were proposed for judging whether the PPM or another agency contributes to rural development: (1) the measure in which campesinos increase their access to available sociocultural, economic, and political alternatives within the national system; and (2) the measure in which campesinos are assisted in building a power base as well as a collective decision-making capacity so that they can effectively influence the policy alternatives which are in their interest.

The pattern of rural development in Honduras that was set in motion by the international missions after 1950 must be credited with setting up, first, the central administrative offices of development-oriented ministries and agencies in the capital city and gradually extending out to the level of the regional market city the offices of agricultural extension and of the development bank, outlets for agricultural machinery and supplies, hospitals as regional health centers, and a series of other modern services. In this model, development initiative has originated with the urban-technical elite, has been channeled through the established hierarchical structure of social communication, and has articulated with the regional business-agricultural elites whose commercial enterprises meet the conditions of

these services. Essentially, the lines of development communication have stopped at the level of the regional city. Agricultural extension agents, for example, may make forays into outlying communities, but, except for the rural school system, no accessible service structure present in rural areas was provided for. Lower-status groups have tended to find access to credit, markets, and development information through the traditional paternalistic relations with rural elites, but since, with new resources, rural elites are expanding their economic, political, and social power, this relationship has been increasingly competitive and exploitative. Thus, in the concrete historical circumstances of Honduras, the criteria of rural development are not simply access, but reversing the process that is creating barriers of communication with lower status groups and causing the deterioration of the socio-economic conditions of these groups.

The Popular Promotion Movement (PPM) had its origin, not in the urban-technical sector, but in a rather cohesive organization based on the campesino leadership of the rural highland communities, and, from the outset was oriented toward institutional changes in the community. The introduction of the radio schools gave this movement an explicit development orientation; a direct mass media contact with the urban-technical sector; a formal position in the community (the radio-school monitor) for receiving development information through the radio or through change agents and disseminating this information within the community; and the system of monthly meetings of community leaders, paraprofessional supervisors of campesino background regularly visiting communities, and regional leadership-training centers that linked rural communities with municipal and regional supervisory teams. The radio schools also linked the PPM with the urban-based Popular Cultural Action (ACPH), an agency specifically dedicated to social change among lower-status rural groups and the first of the agencies which eventually formed CONCORDE. The PPM gradually formed a network of organizations in the rural community which would provide a problem-solving structure at the local level capable of not only putting to work outside resources, but influencing the policies regarding the kind of resources made available. Thus, the PPM evolved as a development communication structure out in the rural area beyond the regional city capable of linking lower-status groups directly with the development agencies at the regional or national level.

The PPM along with ACPH and other urban-based collaborating agencies gradually put together, over ten years from 1961 to 1971, a fairly coherent strategy of development among rural, lower-status groups. Most of this chapter has been concerned with evaluating not only the achievement of immediate objectives but how relevant this strategy has been in actual conditions of campesino life. The experience of the PPM is helpful in providing a series of lessons regarding rural development among lower-status groups.

4.1 The Importance of Structural Change as a Basis for a Successful Adult Basic Education Program

Largely on the initiative of the Catholic Church in Honduras which was impressed with the radio-school model of ACPO of Colombia, the original strategy of development introduced to the PPM was adult basic education focusing primarily on literacy. The evaluation shows that the radio schools of ACPH and the PPM have provided an opportunity for some lower-status individuals to move into positions of leadership, but widespread literacy was not accomplished. The literate few in most rural communities have been those individuals from families that have occupied more central communication positions translating back and forth across the urban-campesino dichotomy. Those campesinos who have laboriously learned to use literate symbols but do not occupy social roles which permit and demand literacy remain in an illiterate world and either do not use these skills or quickly lose them. The adoption of agricultural and health practices is also related to access to bases of social power--land ownership and internal and external centrality--and, unless there is a reorganization of the structure of power in rural communities, agricultural and health education cannot hope to have any large scale success in rural areas.

4.2 The Close Integration of Adult Basic Education with Resource Delivery Systems and Other Rural Development Efforts

The PPM participants through the radio schools and other activities did tend to have higher levels of agricultural and health information than non-participants, but only the women in the PPM showed a higher incidence of implementation of recommended health practices than non-PPM participants. The major factors influencing higher adoption rates of health practices appear to be the adaption of the kind of practices recommended to the practical conditions of rural women; the fact that the official health agencies were making services and resources available out in rural areas so that suggested practices were feasible; and the presence of a women's organization promoted by the PPM which also provided some resources but, more important, was a local structure helping women to bridge the gap between information and implementation. Unless the agricultural and health information is carefully adapted to the needs and capabilities of semi-subsistence cultivator families and is accompanied by a resource-delivery system and a local problem-solving organization, it is extremely difficult for campesinos to improve existing patterns of agricultural production and health care.

4.3 Supporting Concientisation (Awareness of Problems and Value Changes) with Solid Bases of Power in Increased Economic Productivity and Campesino Organization

The leaders of the PPM and the directors of ACPH very soon saw the limitations of the literacy program as an objective in itself and

proposed as a major, long-range solution developing a network of community-level organizations which would be both a resource delivery system and a base for influencing the regional and national decision process. Through various educational methods such as animation and concientisation the PPM attempted to reinforce the latent spirit of protest among lower-status groups and, in leadership training courses, strengthen the existing, participatory, and collective decision-making institutions in rural communities. The PPM participants showed an awareness of problems and solutions, values of communal activism, and rejection of paternalistic dependency much higher than comparable non-PPM participants.

However, the increased sense of social power and organizational capacity were not directed toward increasing economic productivity and removing the economic dependency (forms of credit, land rental, and labor) on larger farmers in rural neighborhoods. The credit-union cooperatives were not an effective means of production credit because the capitalization was so slow. The PPM did have access to funds for community development and, with a great amount of time and effort, speeded up the construction of schools, roads, and small water systems in rural communities. But these projects were generally of more benefit to the larger farmers and the merchants than the lower-status campesinos who built them.

Under these conditions, the unusual spirit of communal activism often appeared to be sheer voluntarism and many PPM leaders were telling me in 1971, "We have worked for ten years, and we are poorer than ever."

Efforts in concientisation and increasing organizational capacity must be quite specifically directed toward the focal concerns and real problems of semi-subsistence farmers: producing enough food to feed the family, improving health conditions, and changing patterns of economic dependency.

4.4 Focusing Adult Education and Rural Organization Around Aggressive Interest-Group Action from the Outset

Initially, the PPM strategy proposed that it was first necessary to develop among campesinos a series of values, types of leadership, and organizational capacity so that they could use, in a humanizing and constructive fashion, the power that would come in interest-group organization. It was expected that through a process of adult education and experience in local community organizations there would develop an awareness of the necessity for interest-group action at the regional level.

However, the capacity for managing rural organizations among PPM participants does not appear to be very much greater than non-PPM

participants. And, when campesinos mobilized in aggressive federations to recover land and press the implementation of the agrarian reform law, the motivation and organization grew out of the immediate conflict with rural elites. This study in southern Honduras found no direct causality between the efforts of the PPM in concientisation through radio schools and the mobilization of campesinos in regional and national interest-group organizations.

After 1971, the PPM in other regions focused its concientisation and training in organizations directly on key issues of land reform and interest-group organization so that the influence of the PPM on interest-group formation is quite explicit.

In the initial analysis of the results of the evaluation of the PPM in 1971, it was evident that the Popular Promotion strategy, as it had evolved in Honduras, offered a very valuable model of development communication linking rural lower-status groups with urban-based agencies interested in this sector. Although the development of a new rural culture re-evaluating the campesino and the campesino way of life is crucial, it is not certain that adult basic education, as it is generally conceived, and neighborhood organizations involved in community development or simply teaching skills do make a significant contribution to rural development. Efforts to develop a new rural culture through adult education and forms of concientisation should ideally be carried out in close connection with activities that will directly increase economic and political power of lower status groups and should be integrated with a resource-delivery system (technical assistance, credit, supplies, marketing, etc.)

These initial conclusions simply reflect in more organized fashion what many leaders of the PPM and directors of the CONCORDE agencies were themselves thinking, and from 1971 to 1973 the development strategy of the PPM was very significantly expanded and reorganized in a way that built upon and formalized the existing communication system, development motivation, and educational methods but directed this toward more central concerns of campesinos. Perhaps the best way to present the potential contribution of the PPM to rural development in Honduras is to describe briefly the agricultural education program (in Spanish, Programa de Promocion Agricola or PPA), which is administered by ACPH in close cooperation with the Honduran Development Foundation.

5. PROGRAMA DE PROMOCION AGRICOLA (PPA)

The Agricultural Education Program or PPA has as its major objective increasing the productivity and therefore the economic power of small farmers, but in such a way that new values regarding agriculture are developed, economic dependency patterns are eliminated, and

small highland cultivators are incorporated into national federations of campesinos. This program finished its experimental phase in 1973 and is now working with more than 8,000 small farmers in five regions of Honduras.

5.1 A Neighborhood Level Organization for Collective Efforts in Agriculture

The initial step in the PPA is grouping together the small farmers in agricultural study groups, which are coordinated by a local leader trained in a two- to four-week course, and which meet regularly to discuss common problems in agriculture and collectively seek solutions. The discussion and planning of the group generally is focused around a neighborhood level experimental plot or special crop diversification project as well as the collective action of the group in various phases of the production cycle. Credit is channeled only to groups, and these groups are encouraged to form a type of production cooperative, provide neighborhood level storage, and market products together. The groups are also asked to affiliate with a major campesino federation and actively support regional and national interest-group action. Thus, the group serves not only as the point of contact with the community but is a communication system for information and innovations within the community.

5.2 Technical Assistance Using Mass Communications

The technical assistance of up to 250 agricultural study groups (4,000-6,000 farmers) in one region is supervised by a team of two or three professional agronomists and ten to fifteen campesino leaders trained in four- to six-month courses as paraprofessional supervisors. Contrary to traditional practice, agronomists do not directly advise individual farmers or even visit local study groups, but provide the technical assistance through the paraprofessionals, a radio program, and meetings with neighborhood agricultural promoters. Thus, the available qualified and motivated professionals are multiplied and costs reduced.

The paraprofessionals are selected on the basis of their demonstrated leadership in the PPM and their dedication to the movement, their interest and ability in agriculture, and their acceptance by the campesino movements of the area. Each paraprofessional directly supervises projects in monthly visits to approximately fifteen study groups. He reviews credit applications, advises in the use of credit, gives instructions regarding very basic improvements such as fertilizer application and vaccination of livestock, and orients the group in the management of collective enterprises.

The agronomists and paraprofessionals meet with the promoters of the local study groups once a month, usually at the site of a demonstration plot, for an instructional talk on the current major projects

of the groups, answer questions regarding problems, and engage in an analytic discussion of the problems and progress of the demonstration plot.

A daily radio program follows the production cycle of the agricultural projects of the groups in the region. The broadcasts are often interviews with local groups on the innovative methods they have used, reports by paraprofessional instructors, or discussion of questions written in by groups. The program announces meetings in communities, courses, prices of supplies and marketing, current activities of the campesino federations and other PPM news. In this fashion the radio serves as a two-way horizontal (between groups) and vertical (with the supervisory team) dialogue.

The PPA also publishes for national distribution a monthly newspaper, which follows a format similar to that of the radio broadcast, and a series of very simple leaflets and pamphlets adapted to the farming capabilities and the literacy level of most semi-subsistence farmers.

5.3 Close Integration of Agricultural Education with Credit, Agricultural Supply and Marketing, and Interest-Group Activities

The PPA in each region is centered around a large regional supply and marketing cooperative and serves as the credit, education, and supervision arm of the office of the Honduran Development Foundation in each region. In some regions, the selection of paraprofessionals, the credit policy, and the content of educational courses is determined by the regional council of the campesino interest-group organization. The PPA is also closely coordinated with the regional leadership-training centers and, in some cases, a regional campesino-level agricultural school, the radio primary-school program of ACPH, the women's homemakers' clubs, and other official and private programs.

All of these agencies form a regional coordinating council, and most of the development planning is initiated at the regional level by this council.

5.4 Adapting the Concientisation Method to Agricultural Education

Obviously, communicating yield-increasing technology is a central objective for the PPA, but the basic premise is that the small farmer is an expert in his own enterprise, and the methology of the local study groups as well as the agronomists and instructors is to develop in small farmers a critical analytical ability in defining the causes of agricultural and agrarian problems and in deciding to integrate new factors of production. Thus, agricultural education does not mean the force-feeding of technology to meet national production goals, but the development of values of experimentation, innovation, and

creative satisfaction in small farmers who generally have a depreciative image of themselves as agriculturists and as a social group. This kind of agricultural education contributes to the development of a new rural culture and an economically dynamic rural sector.

The agricultural education program continues the stress of the PPM on communal activism, but directs this specifically toward training in the management of communal production enterprises, working closely with the regional marketing and supply cooperatives, affiliating with the national campesino federations, and becoming directly involved in pressure-group action.

5.5 Final Observations

The evolution of the Popular Promotion strategy can best be described as a search of lower-status rural groups for solutions to their deteriorating situation with the penetration of the western, market-oriented, individualistic economic system. Many of the blind alleys the PPM got into over ten to fifteen years came as a result of too easy acceptance of decisions made unilaterally by urban-based mentors who have conceived of the rural areas as a cultural vacuum and have defined rural development as transforming the hapless campesinos in their own urban, middle-class image.

However, the directions of the evolution of the adult education and other programs of the PPM have been very greatly influenced by larger structural changes in the national social system of Honduras. The reaction to expanding agribusinesses in land-recovery movements led to the rapid mobilization of campesino in national federations and this has changed completely the context of rural development in Honduras. By 1975, the two campesino federations claim as many as 150,000 members 45/ and are increasingly in a position to dictate to the urban-technical sector the alternatives that campesinos feel are in their interest. It is to the credit of the PPM and the CONCORDE agencies that the present educational programs have become a strongly supporting ally to the aggressive campesino movements. It appears that the PPM is moving closer to the point where it can assert the validity of a campesino culture as a viable alternative in a modern industrial society and back this with the economic power of increased productivity and the political power of mass organization.

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19. In an exploratory comparative evaluation of radio schools in Honduras and El Salvador in 1962, some nine months after the program had begun, 44 of the Honduras sample of 108 were judged able to read and write. Cf. William G. Rhoads, Anson C. Piper and John A. Brodbeck, Use of radiophonic teaching in fundamental education (Williamstown, Mass.: The Roper Public Opinion Research Center, Williams College, May, 1963).

20. Beverly Jean Chain. An analytical description of three adult literacy Programs in Bolivia, Honduras, and Guatemala. Unpublished Ph.D. Dissertation. Teachers College, Columbia University, 1974, p. 252.

21. Ibid., p. 259.

22. Ibid., p. 266.

23. The test was based on an instrument developed at CREFAL, the UNESCO-sponsored fundamental education training center in Mexico, but it was extensively adapted to the Honduran context by previous field testing.

24. To insure that all former students were interviewed, the interviewing team entered the community with a list of all students who had ever enrolled in the radio schools compiled on the basis of records in the central office of ACPH from 1965 (when records were first kept) to the present. The monitor of former monitors added names from the pre-1965 enrollees.

    Since there were no large differences between the tested and untested groups of the total sample on the means of the two crucial variables years of primary-school education and length of enrollment in radio schools, it is estimated that the absence of some 25 percent of the former students did not significantly bias the results of the literacy evaluation.

    The mean grades of primary-school education completed of the tested and untested groups were 1.11 and 1.27, respectively, with a .32 probability that the means are statistically identical (Student's "t" of 1.39, separate variance estimate, and 300.2 degrees of freedom). The mean terms of enrollment in radio schools of tested and untested groups were 1.39 and 1.12, respectively, with a .01 probability that the means are statistically identical (Student's "t" of -2.71, separate variance estimate, and 473.06 degrees of freedom).

25. The radio schools of ACPH, by agreement with the Ministry of Education, accept only those above the legal school age of fifteen. Most of the radio school students are younger, in the fifteen to twenty-five age range. In the sample, 50 percent said they were between fifteen and nineteen and 63 percent said they were under twenty-five when they first enrolled. Only 13 percent were forty or older when they first enrolled. Since the school building campaign that began in the late 1950's, most young Hondurans even in rural areas, have at least the opportunity to attend a public primary school.

26. The cross-tabulation of literate capacities and educational background, excludes fourteen cases of the 328 because of the approximately fourteen non-responses on the educational background question so that the total is only 314. However, the proportion of examined students achieving minimum functional literacy is virtually the same, 62.5 percent.

27. Compendio Estadistico, 1969. Consejo Superior de Planificacion Economica y Direccion General de Estadisticas y Censos. Tegucigalpa, D.C. Honduras.

28. Based on calculations made by Lorraine Skelton, USAID technical assistant to ACPH, in reports presented to USAID.

29. Many of the radio school students have probably not been certain of what they are seeking when they enroll. It was observed that often, when the time came for sending in the lists of the students, the monitor scurried about the neighborhood talking to friends and relatives to convince them that they should enroll. Some enroll out of friendship with the monitor or because the "padre" or the "delegado" of the Celebration of the Word of God (religious organization) "said we should". Some are caught up in the elan of the movement in their communities and feel that it is what a loyal participant in the PPM should be doing. When radio school students were asked what was their personal (and proximate) reasons for enrolling, 50 percent gave a vague answer, "not to be ignorant" or "to learn", while nearly one-third said that they enrolled because they were invited by the monitor or were urged (or obliged) to enroll by their family. Less than 10 percent gave specific, pragmatic reasons such as "for my work" or "to improve my ability in agriculture".

30. In the pre-testing of this questionnaire in a campesino community about fifteen kilometers from Regucigalpa, the great majority mentioned that they could get a better job in the city if they were literate. Obviously, where there has been more urban-industrial penetration, literacy assumes a greater economic importance.

31. Bromberg, Art. cit.

32. Rodney Stares. Estudio de ingresos y gastos familiares en la Zona Sur de Honduras. Choluteca, Honduras: El Obispado, 1971.

33. Myra Hidalgo y Telma Iris David. Practicas de Salud en el Area Rural Tesis presentado a la Escuela de Servicio Social, Tegucigalpa, D.C., Honduras, 1971.

34. The Effectiveness of the radio schools does vary with the quality of the supervision by radio-school coordinators. In a representative sample of seventy radio schools in southern Honduras, the functioning of the radio schools was rated inadequate, adequate, good, and outstanding, according to criteria of capacity of the monitor, number of students enrolled, and the continuity of the school. The coordinators of the radio schools in southern Honduras were also rated inadequate, adequate, good, and outstanding. In

District A, which had a history of good to outstanding coordinators, of the twenty radio schools in the sample, the percentages for different levels of functioning were: adequate, 35 percent; good, 30 percent; and outstanding, 25 percent. In District B, with a history of inadequate coordinators, of the seventeen Radio Schools in the sample, the percentages for different levels of functioning were: inadequate, 71 percent, adequate 29 percent; with none good or outstanding. Robert A. White, The adult education program of Accion Cultural Popular Hondurena, Summary Report. Tegucigalpa, Honduras 1972, pp. 116-121.

35. Compendio Estadistico, 1969 loc. cit.

36. Data taken from a survey by the United States Agency for International Development in Honduras and cited in: Stanford Research Institute, The Economic Development of Southern Honduras. Menlo Park, California: 1968, Part VII, pp. 135-140.

37. In the sample of 613 campesinos for this study the zero-order correlation of years of formal education and the reported ability to read and write is .782 while the correlation of terms in radio school and ability to read and write is .163.

38. The conclusions given here are based on a path analytic model using multiple regression techniques. For a detailed presentation of this data cf. Robert A. White, Mass communications and the popular promotion strategy of rural development in Honduras. Stanford, California: Institute for Communication Research, 1976.

39. The items for the activism-fatalism scale and the interpersonal trust scale were taken largely from the study of change in rural communities of Peru directed by William F. Whyte and Lawrence Williams, School of Industrial and Labor Relations, Cornell University. There were no readily available scales of social independence and perception of marginality, and these were developed on the basis of observations in Honduras.

40. A more detailed description of the methods used in developing these scales is found in the author's Structural influences in rural development: The church and the peasant in Honduras. Unpublished Ph.D. Dissertation, Cornell University, 1975, Chapter XI.

41. The very summary discussion of concientisation and organization capacity presented in this chapter has omitted the results of the analysis of perception of marginality. Although PPM participants tended to have higher scores on this measure, the differences from non-PPM participants are not great. This and other observations indicate that PPM participants are still not strongly conscious of urban-rural inequalities.

42. Lester Milbrath. Political Participation. Chicago: Rand McNally and Company, 1965. A more detailed analysis of the relative importance of formal education, external centrality, socio-economic status and PPM participation in these measures of concientisation, organizational capacity, and interest-group activity indicates that in this sample of 613 campesinos, PPM participation is by far the strongest influence. Cf Robert White, Structural Factors in Rural Development: the Church and the Peasant in Honduras, Chapter 10-12.

43. Cf. James Morris, Interest-groups and politics in Honduras. Unpublished Ph.D. Dissertation, The University of New Mexico, 1974.

44. Emanuel DeKadt, op. cit., 1970.

45. "Honduras: Land Seizures," in Latin America. 1975, IX.

CHAPTER VIII

VOICES FOR DEVELOPMENT: THE TANZANIAN NATIONAL RADIO STUDY CAMPAIGNS *

Budd L. Hall and Tony Dodds

1. INTRODUCTION

'First we must educate the adults...' has been a Tanzanian slogan since the early days of Independence. This is partly a socialist concept--nearly half the people are adults, and nearly 90% of the adults are illiterate. It is only fair that a large part of the education resources should be spent on them. It is also partly economic--the children of today will not have an impact now.

In his New Year message to the nation on January 1, 1970, President Julius Nyerere declared 1970 to be Adult Education Year, and the one year turned into two when adult education was maintained as the theme for 1971 also. Adult education became the responsibility of the Ministry of National Education. District Adult Education Officers were given crash training and placed in each of Tanzania's districts. Introductory courses in adult education techniques were given to head-teachers and teachers in primary schools, and the primary schools became the centres of increased village-level adult education activities. Six districts planned to run campaigns to try to eliminate illiteracy by the end of 1971.

It is in this atmosphere of rapid change and development and of political and educational consciousness that the harnessing of radio to mass educational campaigns, which is the story of this chapter, must be seen.

2. THE EARLY EXPERIMENTS

During the 1970 election campaign in Tanzania, the Director of Elections pointed out that the only way he could communicate last-minute instructions to the election officers supervising the campaigns and the voting all over Tanzania's vast expanse of territory was to broadcast

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* The International Extension College, Cambridge, England, published a slightly different version of this chapter in its Broadsheets on Distance Learning in 1974.

them over the radio. Only in this way could he be reasonably sure that the vast majority of the supervisors in the rural centres would hear of a change of plan in time to implement it, whereas communication by post might take anything up to 10 days.

Issuing instructions, however, was not the only way radio was used in the 1970 election campaign. A nationwide adult education study campaign on the purposes and conduct of elections was also launched over the radio. This was the third experiment of its sort. Like its predecessors it was based on three main elements: a radio series, supporting printed materials, and organized radio study groups. Unlike them it brought together a wide range of educational, political, and governmental institutions for the planning and preparation of the study materials and for the organisation of the study groups.

In 1973 a much larger radio study group campaign was run, called Mtu ni afya (lit. 'man is health'). It reached nearly two million citizens. For the first time this was not a civics or economics campaign; its theme was health education. There is evidence that it had a dramatic effect on certain health practices among a very large number of people. It seems to show that this method of education really is a cheap and effective method of mass education, given the co-operation and involvement of several different technically expert bodies and the dedication of a large number of field organisers.

How has this achievement come about? This chapter attempts to trace the development of radio study groups in Tanzania from their first hesitating and unsophisticated beginnings in Moshi and Mbeya in 1967 to the massive organization involved in the latest health education campaign. It is a biased account. Both authors were intimately involved in the development of the campaign at different stages. It is hoped that the facts reported combine with personal enthusiasm to give an informative account of a truly exciting story.

The idea of radio listening groups was born in Tanzania in two different institutions and at opposite ends of the country at approximately the same time. The Co-operative Education Centre, Moshi, founded in 1964 to cope with the need for on-the-spot education for the members of Tanzania's co-operative societies, decided very early in its life that its purposes could not be achieved solely, or even in the main part, by face-to-face education methods. So it began to experiment with simple correspondence study guides. The majority of village-level Tanzanian co-operators have had no formal schooling, and therefore printed materials could only be used through literate members of co-operative groups reading them aloud to their illiterate colleagues. The CEC decided to support and enliven these courses by radio programs which presented the essential ideas and information in an oral form.

These two methods, the radio series and study letters (as the correspondence pamphlets were called), were combined with the organization of study groups, modelled to a large extent to the study circles

common in Swedish labor and co-operative education. The first such radio/correspondence study group project run in 1967 was about the working of co-operative societies. It was followed in 1968 by a series about the work of committees. By the end of 1968 more than 400 groups had registered in one or the other of these courses.

Also in 1967, but in Mbeya region in the southern highlands of Tanzania, a similar experiment was launched by the Institute of Adult Education of the then University College of Dar es Salaam. The IAE started life as an extra-mural department of Makerere University catering for the university-level interests of non-university students, but since it had become an Institute of Adult Education in 1964 it had concerned itself increasingly with professional experimentation, research, and services for adult education of all kinds and at all educational levels.

1969 saw the introduction of Tanzania's second Five Year Development Plan, its first since the Arusha Declaration gave voice to its choice of a socialist road to development. Economics, and the economic choices open to the people of Tanzania, were the themes of political and educational development throughout the year. Both the Co-operative Education Centre and the Institute of Adult Education chose economics as the topics of their expanded plans for radio study group campaigns.

During the early part of the year, the CEC prepared a course in Basic Economy. It recorded programs, and it wrote and tested study letters on the economics of everyday life for village-level peasant co-operators: these set out to explain in simple and homely terms questions of income and expenditure, and the concepts of budgeting, savings, credit unions, and cooperative economics. With the materials ready, and with the help of the Institute of Adult Education, the CEC ran training courses for prospective study group leaders in the societies. These courses were run at two levels; first, courses for co-operative education secretaries, employed at the level of unions of co-operative societies, and second, training courses for society secretaries or chairmen, the prospective group leaders in the campaign, which were put on by the education secretaries in their turn.

This was the most comprehensive campaign the CEC had yet prepared, but the methods it used remained basically the same. A dramatized radio program highlighted the major points of the day's lesson. The same ground was covered, though in more detail, by the study letter. Usually, after a group had listened to the program, the literate members took turns reading parts of the letter aloud to the whole meeting. The letter, and the program, ended by posing three or four questions for discussion which once more highlighted the main points to be learned. The group then discussed these questions and reported on their discussions by correspondence to Moshi. During the first campaign more than 150 groups registered for the course.

The IAE course for 1969 was once again aimed at a more general audience. The intention was to concentrate on those areas where the Institute itself had a regional office, and it was seen as another experimental project. An attempt was also made to publicize it to the CEC groups following the Basic Economy course.

The government already planned to produce a popular version of the five-year plan in both English and Swahili. The Institute therefore decided to plan its own course around it. A study guide was produced to lead groups through the popular version, to pose discussion questions, and to propose additional study activities. The radio series also followed the popular version, and tried to give live examples and personal explanations of the main points raised. Two training courses for group leaders were held, in the northern and southern offices of the Institute. Approximately 50 groups enrolled; more than half of them in areas covered by these two offices, some of them in the same villages in the south where the first pilot project had been run two years previously. Two methods of evaluation were used. A mid-series survey of 15 groups was carried out by University Adult Education Diploma students who tried to find out how the groups worked and what they did. After the series was over, two further seminars were held in the north and the south at which the group leaders who had taken part in the project completed evaluation questionnaires and reported on their experiences.

The development plan campaign revealed many serious organisational and educational problems. Local institutional leaders and their national headquarters had not been sufficiently involved in or briefed about the project in its early stages in order to get their approval and participation. The accompanying notes and study guides were neither simple enough nor attractively enough printed to help the group leaders and their members to conduct relevant discussions on complex national economic issues. Both radio program and study guides failed to give sufficient guidance to the groups to enable them to find local examples of the generalized facts of the development plan; thus they did not succeed in stimulating realistic discussions meaningful to the group members. It was with these experiences in mind that the Institute approached the next campaign.

3. UCHAGUZI NI WAKO 1/

3.1 Planning the Campaign

Nearly nine months before the elections, the Institute began to discuss with the various agencies concerned the idea of a national election study campaign, to be called Uchaguzi ni wako (`the choice is yours'). The study campaign was to consist of several elements--a booklet/study guide on the elections, a closely related radio series, group listening to the programs and group study of their and the booklets' contents, local organization and servicing of study groups, and

pre-campaign training of prospective study group leaders. To have a hope of success it would need the active ivolvement of the party and the Electoral Commission, the University, and the Ministry of Education's Adult Education Division. From the very beginning the project received the very warmest possible support from all these important national agencies, and without this support the Institute could not possibly have produced study materials which carried the weight or gained the popularity that they did.

The support given in the production was carried over into the organization of the listeners. This also involved another form of co-operation. The Institute, with its limited geographical coverage, could not hope to publicize and support study groups throughout the country. But with the active assistance of the Adult Education section of the Ministry of National Education, a much wider coverage was obtained. As detailed below some form of written response to the campaign was received from all 17 regions on the mainland, and from 40 of its 60 districts. Publicity, in part as through the radio and in the newspapers, was mainly concentrated on the Institute's own up-country officers and the Ministry's District Adult Education Officers. Many individuals and a few groups seem to have listened to the programs and read the booklet without prompting from adult education officials. But the vast majority of known listeners were organised listeners--listeners who responded to the organisational efforts of the Ministry, the Institute, and voluntary Adult Education Associations.

Once the project was approved, a planning committee was set up consisting of one member each from the Electoral Commission, TANU, the University Political Science Department, and several staff members from the Institute of Adult Education. The committee decided that the campaign should try to cover the subject in two ways; to teach about the machinery of government--how Parliament and local councils work, what the President does, how election campaigns are run, and how to cast a vote; and to stimulate informed discussion about the meaning of this machinery and the duties and responsibilities of the elected representatives of the people.

This same planning committee became also the production and editorial committee for the booklet/study guide, on which the radio scripts and all subsequent materials were closely based. To stimulate as much interest as possible, and to give reality to the views and theories of the writers, a large proportion of the radio programs consisted in interviews with officials and commentaries on actual events. In addition to the more purely didactic parts of each program, two regular weekly features were the opening 'Question Time' in which listeners' questions on previous programs were answered by experts, and the closing 'Election Story' which attempted to highlight in dramatic form the main points of the program, and of the campaign.

Previous experience in Tanzania and elsewhere had suggested that the role of the study group leader in an exercise such as this was crucial, and that some form of introductory training for the leaders could give them significant help in carrying out their role. A series of short training courses were therefore held to introduce prospective group leaders to the materials as well as to give them some initial practice in the techniques of study group leadership. The training courses were also the most important medium of publicity.

3.2 Characteristics of Groups

Information about groups was obtained from two sources; and analysis of regular reports submitted by groups giving factual details, and visits to selected groups by the organisers. At the end of the series, a survey was conducted in which a detailed questionnaire was given to 26 group leaders selected from five regions. And to try to get a wider impression of the listenership to the radio program, a competition was held, offering prizes of books to listeners who successfully answered some simple questions included in, and about, the last two programs of the series. Most of the information quoted here is based on the response to these various attempts at evaluation.

In the absence of any regular audience research in Tanzania it is only possible to speak confidently of listeners who made voluntary contact with the project's organizers by means of the various kinds of report methods provided. Inevitably such listeners are those with the greatest initiative and it is almost impossible to make a sensible estimate of total listenership from them. It is probably not unreasonable, however, to assume that the programs attracted a casual audience many times larger than those who took the trouble to write out reports. 2/ The reports alone give evidence of more than 3,300 listeners, mainly members of study groups.

In all, 220 weekly report forms were received from over 70 groups. The average group had twenty-four enrolled members. Nineteen or twenty of them attended regularly (i.e., more than half the meetings) and the other four or five came occasionally. The twenty-four members represented a wide cross-section of the rural community of Tanzania. In a typical group, thirteen were men, the other eleven were women. Seventeen were farmers, three were primary school teachers, two were locally-employed laborers, one was a government official and one was a local TANU official. Their educational backgrounds also varied widely: one of them, usually the group leader, had been at secondary school, four had completed seven years at primary school, two six years, six had between one and four years at primary school, seven were literate though they had never attended primary school, and four were illiterate.

Regular listeners were widely distributed over the country. Every region in the country had some regular listeners to Uchaguzi ni wako though in a few regions the response was minimal. What is perhaps

more significant in relation to the planning of future campaigns is that the largest numbers of groups, and therefore, of listeners were registered in those regions where pre-campaign training courses had been held for study group leaders. There are two ways of interpreting this: on the one hand the training courses stressed and illustrated the importance of returning report forms, so the figures might simply suggest a distribution of groups which filled in the forms rather than the distribution of groups which actually followed the course; on the other hand the figures bear out previous experience in Tanzania and elsewhere that the training of group leaders is an important step in the organization of a study campaign and, therefore, where training courses were not held the chances of success were smaller. Both interpretations probably reflect elements of the full picture. Finally the fact that so many groups existed without sending in weekly report forms (92 compared with 71 which sent them in), even, in many cases, groups which were in touch with local adult education officials, underlines the difficulty of getting representative impressions and information as a campaign proceeds by means of simple written report forms.

It would seem then that the success, or at least the geographical success, of a study campaign aimed at the mass of the people, which makes use of distance teaching techniques in a country such as Tanzania, depends very largely on the strength of the organization network on which it is based and the opportunity to train group leaders to run the local groups. In Tanzania a national adult education network now exists, though the restraints imposed by shortages of trained personnel and resources for transport remain; at that time, however, it was not possible to provide simultaneous and equally effective training throughout the country for local leaders.

A further factor contributing to the success of a campaign such as this is the distribution of study materials. Radio coverage was adequate on the whole; in 87% of all reports the radio program had been heard, and few problems were reported in obtaining radios or in getting good reception. Distribution of printed materials, however, proved to be more of a problem. The network of adult education officers was used as the main distribution system, and wherever possible, they were supplied through personal delivery with their quota of booklets and pamphlets and were expected to hand them out on request to group leaders. Every primary school in the country was supposed to receive one copy of the booklet automatically. Apart from additional specialised distribution, extra copies were sent on request by post to adult education officers who were running groups and did not have enough copies for them or to individual group leaders who asked for more. It seems that the initial round of distribution worked reasonably well, but postal distribution in reponse to postal requests proved to be very slow, and in many cases the additional copies were received just before the series of study meetings ended. In all, 20,000 copies of the booklet were printed, and nearly all of them were distributed free of charge.

3.3 The Groups in Action

Perhaps the simplest way to give a realistic impression of how the study groups worked is to describe the typical group--who was in it, how it was organised, and what it did during its meetings. The description is based on an analysis of the facts and figures collected in the survey of twenty-six groups carried out after the study campaign was over; no single group fitted the pattern exactly. Such a description does not do justice to the variety of approaches adopted by the groups or to the individual initiatives shown by group leaders. The description will therefore be followed by a more detailed discussion of some of the important features of group operation, in which variety and initiative will be highlighted. Again it is necessary to stress that the twenty-six groups surveyed were almost without exception from areas where group leader training courses had been held, and they were selected because they were known to exist. It can safely be assumed that they were among the most active and successful of the groups.

News about the study campaign had been received from the local District Adult Education Officer, and the primary school headteacher had also heard about it directly from the nearest regional office of the Institute of Adult Education. The headteacher normally took on local publicity and recruitment, both through the local organisation of TANU (the Tanzanian African National Union, the country's single political party) and through the existing adult education activities at his school. In many instances the existing political education class was set up as an Uchaguzi ni wako study group.

Meetings were held in the local primary school and were integrated into the school's normal adult education program; this recruitment, organization, provision of accommodation and materials, and general supervision were taken on by the primary school adult education workers. Eight meetings were held out of the possible twelve, and at seven of them the group listened to the radio programs. On the eighth occasion the program was not broadcast as, without warning, a national football cup competition was broadcast instead! The group was naturally rather annoyed at this interruption in their studies, but improvised by reading aloud the relevant chapter from the book and discussing that. The group meetings lasted on average for 1-1/4 hours, including 10 minutes before the radio program, 30 minutes of the program and 35 minutes of discussion after the program had finished.

The group leader, who was typically the primary school headteacher, helped on occasions by one of his colleagues, also acted as chairman of the meetings. As chairman his job was 'to select members to speak', while as group leader he helped to guide the discussion, to make sure that the main points were covered, and from time to time to explain some of the most difficult subjects to his fellow members. Each week the group selected one member--usually one of the teachers or government officers--to act as secretary. The secretary's job was to keep attendance records and to take notes on the group's discussion. His notes

2. Media Integration--When multiple channels are utilized to carry a common message theme, they can be presented to receivers in a unified and integrated manner when the individuals are together in a listening group. Otherwise, each of the multiple channels is likely to reach a somewhat different audience, or to reach the same receivers at different times, thus losing some of the synergistic effect of the multi-media campaign.

3. Persuasion and Action--Attitude change is more likely to occur when participation and group influence are present. Group listening and discussion is more likely to lead to action than is individual reception.

4. Feedback--Group reception of the mass media facilitates the formation of feedback messages and provides a channel to convey them to the mass communicator.

2. ORIGINS OF RADIO FORUMS

The first experiences with radio listening/discussing groups were in Europe. The idea of linking radio with interpersonal channels originated in England in 1928, according to Cassirer (1959), and then spread to Norway, Switzerland, and Czechoslovakia in the early 1930s. Radio forums started in Germany around 1940. In 1929, a year after radio forums started in England, groups of American parents listened to regular radio broadcasts from station WEAO at Ohio State University.

However, it is acknowledged that even prior to 1928, experience with media forums had already begun in Soviet Russia. "Study groups" were started throughout Russia, using print media such as newspapers, which were read and then discussed in the forums. These study groups were considered by Lenin to be a key tool in the "agitation and propaganda" apparatus of the Communist Party. The use of print forums spread from Russia to China, where they were used since the early 1930s by the Communist Party to train cadres. After 1949, the techniques of using such study groups were perfected by the Chinese Communists for use with the mass public as part of political communication activities and for such development campaigns as pest erradication, family planning, and farm communalization. Hiniker (1966) estimates that perhaps 70 percent of the adult population in the People's Republic of China participated regularly in study groups in the mid-1960s.

Canada's farm radio forums began in 1940 when a special committee established by government and private educational agencies was set up to plan and put into action a system of radio forums. After a year of intense preparation, the first program was aired in January 1941 (Nicol and others, 1954). The Canadian system was the first truly

nationwide network and the first to be aimed mainly at rural people. These are two reasons why the Canadian experience represents a working model for other countries, a model that was copied directly in India and in Ghana (as will be described shortly), and somewhat less directly in more than a dozen other countries. India, starting in 1954, was the first developing country to adopt radio forums as a strategy for nationwide rural development. A similar approach has been followed in the 1960s and 1970s, at least on an experimental basis, in Ghana, Nigeria, Togo, Niger, Dahomey, Malawi, the Malagasy Republic, Jordan, Pakistan, Indonesia, Japan, Costa Rica, and Brazil. UNESCO played an important role in the cross-national diffusion of radio forums from Canada to India, Ghana, and Costa Rica, and in sponsoring research on the effectiveness of forums in contributing to rural development.

By no means have all of these radio forum systems maintained their vigor over the years. The English forums died out after about a decade or two, and Canada's rural radio forums ceased in 1965 after 24 years of large-scale operation. So the Canadian forums were dying out at about the same time they were being widely copied in Latin America, Africa, and Asia. The rural forums in Canada were mainly intended to encourage farm people to solve their local community problems, to break down rural isolation, and to develop community leadership, rather than to convey technical information about agriculture and other rural development topics. So when farm isolation and community inaction were no longer felt to be serious problems in Canada, interest in radio forums dropped off. In one sense, the forum system worked itself out of its original job.

3. THE POONA EXPERIMENT ON RADIO FORUMS IN INDIA

Probably no other developing country has paid so much attention to rural radio forums as a tool for modernization as has India. The most important evaluation of the Indian forums, which took place in the former state of Bombay (now Maharashtra), is commonly known as the Poona project, because this city was the headquarters of the five Bombay districts in which the research was undertaken. An independent research organization, the Tata School of Social Sciences, conducted the field experiment with UNESCO assistance.

Forty villages were selected for the experiment; 20 of them had radio forums, 10 had raido sets for about a year before the experiment started, and the other 10 were provided with receivers for the project. Personal interviews with forum members and direct observation of the operations of the forums during the broadcasting and discussion were the main methods used to collect the data.

Previously in this chapter, in Tables 2 and 3, we presented Neurath's (1960) main findings from the Poona experiment. The greatest difference in the increase in knowledge between the forum and the radio-but-no-forum respondents is a clear indication of the superiority of organized group-listening-plus-discussion over individual unorganized reception. Also, the radio forums tended to bring into the open a good deal of knowledge that was latent in the villages. The peasants themselves provided the means to solve many of their common problems by discussing alternative ways of action to cope with the particular problem at hand.

3.1 India: After Poona's Project

The Poona project clearly indicated the superiority of the rural radio forums in India. Several factors accounted for its success:

1. The project was the center of attention of many institutions and influential officials.

2. The experimental treatments were brief, lasting only 10 weeks. This period may not have been enough time for the participants to become weary, as in non-experimental conditions, when the radio forums are expected to last for years.

3. The project had ample financial and staff support, with highly-trained personnel and financial resources that are usually scarce in developing countries.

Schramm and others (1967a and 1976b), in a thorough analysis of India's experience with radio forums, raised the important question of "whether the forum itself is a less potent tool than had been thought, or whether it is being used and supported less well than it should be".

In order to answer this basic question, he analyzed six studies done on radio forums in India after Poona. They agree overwhelmingly on the finding that radio forums are positive as a strategy for improving the livelihood of the peasants. All the six reports cite notable accomplishments of radio forums in creating (1) interest, (2) learning, and (3) action by villagers.

In summary, the information available from the Poona project and from the other studies carried out in India tends to support the concept that the radio forums are a "potent tool" -- using the words of Schramm and others (1967a) -- for rural development in India and elsewhere.

In 1959, the Indian government decided to try to introduce the forums nationwide and set a goal of at least three forums (called "radio rural forums" rather than "radio farm forums") in each community development block -- one forum for each 200 square miles containing between 60 and 80 thousand persons. Results from the Poona project were summarized and applied in this national effort for radio forums.

By the end of 1959 the radio rural forums had become a national program which was incorporated a short time later in the Third Five-Year Plan. The final goal of 15,000 radio forums was set to be reached by March, 1966.

Each forum consisted of between 12 and 20 members, the majority of them men. Special care was taken to include people from different castes, although this was not always possible. In some villages, success was attained in mixing Harijans (the "untouchable" caste) with non-Harijans. Farmers made up the majority of listeners.

Although the majority of participants were elders, some young people also participated. Established conventions were usually observed, such as the young people not contradicting the views of their elders in their presence.

The chairman was usually chosen from among the elderly, and not necessarily an educated villager. He was usually the sarpanch (village leader) or the school teacher.

The secretary covenor in India's radio forum system is a very important person to the success of the forum. His duties are to set up the meeting place, check on the radio set, seats, lights, and so forth. He is also to publicize in advance the content of the broadcast and the time of the program among the villagers. He keeps records of the weekly activities, such as a list of those in attendance, the discussions, and the conclusions reached. Usually he is an educated man, capable of writing and reading well, and often he is also the secretary of the panchayat (the village council) or the gram sevak (the village-level extension worker) or the teacher of the village.

Weekly or biweekly programs 30 minutes long are broadcast by All-India Radio for the forum audience. The emphasis is on the practical aspects of rural life: health, agriculture, and home improvement topics, intended to stimulate discussion and action among the participants.

While radio is the core medium, it is supplemented by visual aids such as films, pictures, posters, charts, and a fortnightly guide for the farm forum programs. This guide included general background information, program schedules, and specific information to help convenors in guiding the discussions. In summary, while radio is the main channel, the Indian radio forums use a multi-media approach.

until the present day, by highlighting the achievements since Independence, to give people a good reason for regarding 9th of December 1971 as `a time for rejoicing'. It was this idea which suggested the title for the series: Wakati wa furaha. The title was intentionally double-edged. The year of Independence was something to be joyful about; at the same time the study program had to be enjoyable too. Membership in and attendance at group activities were voluntary; if the study group meetings were not enjoyable, the groups would fade.

This campaign was to be on a much larger scale than its predecessors. Though groups had existed in all regions of the country for the election study campaign, they had been heavily concentrated in the areas where the Institute had its offices; this time all regions had to be more adequately catered to, and there should be at least 1,000 groups. For such a subject and for so ambitious a campaign the Institute again needed the cooperation of many other institutions. In particular the Co-operative Education Centre, which had itself been planning an Independence celebration series, agreed to a fully coordinated project. Its organizational structure, and its 1,200 existing groups became an integral part of the campaign. The planning began nearly 10 months before the programs were due to be broadcast and an intensive preparation schedule was worked out. Because of the many agencies involved, the project was faced with the vital problem of finding an appropriate combination of maximum democratic involvement and maximum production efficiency.

4.2 The Study Materials

The study materials consisted of three elements: a series of radio programs, a textbook, and a study guide. It was felt that the radio programs and the accompanying textbook chapters need not be tightly tied to each other; the former would be used as a permanent source of background and detailed factual information, and should be written to be read aloud; the latter should aim to stimulate, to illustrate and to give authenticity. Contributors to both the programs and the written material were advised to avoid an academic treatment and go for a light touch, and to present the material in such a way as to encourage group participation and give opportunities for `dramatic experiences'. All the materials were to be produced in Swahili.

Each radio program consisted of 15 minutes of actual studies, preceded by 15 minutes of music, answers to questions sent in by groups, and announcements from the campaign organizers. The first 15 minutes were a kind of "gathering time", to give group members a chance to arrive, settle down and tune in. Because of their topical character, the production of these was left to a later stage.

The arrangement was that the Institute was to collect the raw materials, assisted by a number of commissioned contributors from various organizations; these raw tapes were edited by the Institute's

radio tutors in cooperation with the producers Radio Tanzania had assigned for Wakati wa furaha. Ideally, as for any other creative and imaginative work, radio programs are most likely to succeed when the producer, given the broad outlines, is able to develop a systematic and coherent theme running through them. This aspect of the radio production was most difficult to achieve, partly because of the extreme variation in the raw material supplied by so many organizations. When the final programs were broadcast, the Institute had to be content with linguistic and technical quality, but was not able to achieve the thematic integration hoped for.

The study guide, as its name implies, was meant to help and guide the group members in their work. First, a general introduction explained the aims of Wakati wa furaha, described a functioning study group, presented the various study materials, and spelled out the use of the study guide. Then followed recommendations for each of the ten meetings, which, with the exception of the first and last meeting, all followed the same pattern. After summing up the theme of the meeting, suggestions were made about possible points for discussion and further activity. The section on the first meeting reminded the group of some administrative matters (minutes, report forms, election of secretary). The section on the last meeting brought up the question of keeping the group alive for studies in other subjects. The study guide was planned, written, and edited by the editorial group at the Institute.

Besides the reading materials for groups, it was felt that the study group leader might need some guidelines and advice. If the study guide could be said to tell group members what could be done, the group leaders' manual told him how it could be done. This duplicated booklet was based on various materials the Institute had produced over the years on study group methods and leadership. It covered both general questions of study group leadership (how to conduct meetings, the duties of a study group leader, etc.) and practical hints for conducting each single meeting with references to textbook and study guide.

It was decided at an early stage that IAE should not undertake the actual production of the printed materials. First of all, this would have meant a money investment the IAE could not make. Second, as it is a time consuming process for which only two months could be set aside, a totally self-reliant production might have jeopardized the whole campaign. The East African Literature Bureau (EALB) undertook to publish both the textbook Tanzania kabla na baada ya Uhuru (Tanzania before and after Independence) and the study guide. The books used in the campaign were printed in Nairobi. This caused the Institute as distributor unforeseen difficulties; there were delays in deliveries from EALB which were exacerbated by a lengthy customs procedure. As a result some groups got their books in the middle of November, more than halfway through the campaign.

4.3 Publicity

Publicity for Wakati wa Furaha consisted, first, of word-of-mouth publicity through adult education seminars, and training courses. An information kit was developed for use by education officers to help them present a talk or study session on the campaign; this included pocket notes, an introductory tape and general advice. Press and radio coverage built up particularly during the training period, and included a series of quizzes on the history and development of Tanzania. These elements were augmented by posters for display in schools and other pulic places, and by exhibitions.

4.4 Evaluation

The design and methods of evaluation can be seen from the following outline:

	Evaluation Objectives	Sources
1.	Per participant campaign costs	Accounting procedures
2.	Description of the operation of the training seminars	Training reports from staff
3.	Participants' reaction to training seminars	Participant reaction forms
4.	Demographic data	Class registration forms
5.	Dates of attendance	Class registration forms
6.	Geographical distribution of groups	Group registration forms
7.	Amount of knowledge learned during campaign	Cognitive knowledge test
8.	Obstacles to organized group study	Evaluation seminars; District Education Officers' questionnaire

These objectives were worked out by the campaign organizers from the first stages of the campaign, and the evaluation was planned at the same time that the planning of the general campaign was going on. The objectives that were finally chosen were a compromise between the level of precision needed and the available resources. Wherever possible evaluation procedures were integrated with everyday administration. For example, the most valuable single source of information turned out to be the class attendance register, which also included questions about the age, sex, schooling, etc., of the group members and leaders.

One of the most important evaluation objectives in the campaign was to measure whether or not a gain in knowledge could be shown to have resulted. In order to do this a ten-item knowledge test was designed which could be given to a sample of groups both before and after the campaign. A series of questions which were common to both the textbook and the radio programs were prepared and, after pre-testing and analysis, ten multiple-choice questions were selected.

Fifty groups were chosen in ten different areas. The tests were to be administered by the organizers. In groups where a number of illiterates were members (most groups), the tests were to be administered orally to the participants one at a time during the first week of the program. In groups where everybody could read and write, the participants filled in the tests themselves.

It was felt that the obstacles to efficient study group operation could be best identified in discussions with those who had taken part in the campaign. Two evaluation seminars were held: one with the district Adult Education Officers who were largely responsible for the campaign up-country and another with organizers from the Institute of Adult Education, the Cooperative Education Centre, TANU political education unit, and Radio Tanzania. Both of these proved to be very useful ways of analyzing the problems in the campaign.

4.5 Training

Experience, especially from Uchaguzi ni wako, showed that training study group leaders was crucial for the establishment of groups. The functioning groups were concentrated in areas where training seminars had been conducted. In other words, to make Wakati wa furaha a really nationwide campaign, study group leaders from all parts of Tanzania had to be trained.

To tackle this gigantic task the Institute and the Cooperative Education Centre each developed a two-stage training program in which local organizers were instructed in ways in which they themselves could best train the study group leaders. CEC, the more experienced of the two organizations in running study campaigns, was able to make use of its existing structure. It was a system of "wings" in eight areas of the country, with two instructors attached to each wing working in close contact with the cooperative education secretaries of the unions. These instructors together hammered out a program of training for study group leaders which was to be carried out by the cooperative education secretaries locally and financed at the local level.

The Institute for its part was enabled to carry out a similar scheme by a decision of the Ministry of National Education that District Adult Education Officers should be asked to train study group leaders and organize the campaign in their areas. Accordingly, seminars organized jointly by the Ministry and the Institute were held in six different areas, at which the district Adult Education Officers were

introduced to the idea and techniques of the study group method. The method itself was extensively used at these seminars to give the Officers practice, and many of the materials presented to the participants were designed to be of direct use to them in conducting their own training sessions later on. At the end of each seminar, participants were asked to complete questionnaires on their reactions. From these it was possible to analyze organizational problems they had experienced, such as travel difficulties, and their predictions of likely problems to be encountered in the second stage of the training process which they would themselves be conducting.

4.6 The Groups

In the instructions during training suggestions were made that the groups should have between ten and fifteen members; in fact the average was 16. 5/ The groups actually ranged from three members to more than 230. No decision could be reached on the question of limiting the number of people who could join each group. It is unjust to tell someone that he cannot be a member, and we have seen that some groups in fact exceeded 200 members. Most of these groups listened first to the radio broadcasts and to passages read aloud from the textbook. They then broke up into sub-groups for discussions. It is possible that the method itself is self-limiting; it is so difficult to conduct discussions and dialogues with more than fifteen people that the groups tend to diminish without outside control. It is an important question to consider for larger, better publicized campaigns.

The rates of attendance were calculated on a group rather than an individual basis, and were taken to be partial indicators of the interest in the method and the topic of the campaign; the only sure way of judging its impact was to see whether members continued coming to meetings time after time. The attendance rates ranged from 10% to 100%, the former meaning that each member attended an average of one meeting. The average attendance rate for all groups in the country was 65%, a figure which must be seen as an achievement when compared to the 33% which is normal for classes in adult education centers.

One of the important goals of Wakati wa furaha was to establish the campaign as an effective national exercise. In the previous campaigns the main distribution of groups had been limited to two or three regions; this time the campaign was run across the whole country. Registration forms show that groups were registered in 42 districts out of a possible 65.

The organizers of the campaign were faced with the question of keeping the number of groups at a level that made supervision and supply of materials possible. One of the limiting factors was the number of books which were available for distribution. The principle was that each trained group leader would receive one copy of the textbook which he could read aloud to the members. In fact there were not enough books

to distribute to each group leader; some groups were not formed because of this. The other controlling factor, the availability of trained leaders, meant in this case that no more than 2,000 groups could be officially organized because this was the number of trained leaders.

The supervision of study groups was conducted mainly by District Adult Education Officers; the Institute staff also participated. The officers met with many problems; one was the fact that groups naturally met only during radio transmissions and consequently supervision opportunities were restricted. The distance between groups was another limiting factor. It was recognized that groups which were not visited by a representative of the campaign organizers tended to feel deserted. In many cases where groups failed to complete the planned series of meetings, lack of supervision was the most likely cause. The absence of supervision also meant that problems which the groups met remained unsolved.

One of the objectives of the evaluation was to get some precise information about the characteristics of members of this kind of study group, and again the attendance registers were the principal source of information.

The ratio of men to women varied a great deal from district to district. The overall figures for the campaign were 62% men and 38% women. The proportion of men to women in this campaign was somewhat a surprise to most of the organizers, as the ratio of women to men in the classes run by the Ministry of National Education is roughly 2:1. There have been several thoughts about why this campaign seemed to appeal to men more than to women. One hypothesis is that as the subject of this campaign was political and historical, most women felt that it was not in their field of interest. Politics are often left to the men. Another hypothesis is that because the campaign stressed discussion and dialogue as the method of learning, women were less interested. In many areas of the country women are not accustomed to discussing this kind of subject with men. Another explanation might be that the large number of women in the national adult education program is due to the large proportion of literacy classes and homecraft subjects which are easily offered and taught in the community schools. In the past men have had more opportunities to learn to read and write than women, and are not so attracted by the literacy classes which predominate in the adult education centers.

Distribution of age among the participants was very even from 16 to 40 years old. The figures did not decrease substantially until the 51-55 bracket. This implies that the campaign did not contain aspects which would tend to discourage one age-group or another.

When studying the figures on the education level of group members, it is necessary to remember that the object of this campaign was to reach the largest element of the rural population--the farmers,

who by and large have not been to formal schools. If most of the group members were, for example, ex-standard VII leavers, the main audience of the campaign would have been missed. In fact the majority (68.4%) had standard IV or less education, and only a relatively small proportion had completed more than standard VII (13.6%). This means that the campaign was in fact quite successful in reaching the intended audience. This is confirmed by the figures on the occupations of the group members. If in this campaign the object was to reach the rural population, then one would expect to find that most of the members registered were farmers. If primary school teachers were involved in many groups as group leaders, then we should find them represented in the statistics in roughly a one to ten ratio, the suggested ratio of leader to members. In fact farmers made up 72% of participants and teachers 9%, with artisans, civil servants and office workers together amounting to 13%.

Basic demographic information was also taken from the attendance registers about the group leaders. We were interested in knowing the extent to which the leaders were similar to the group members. One of the strengths of the radio study group method is that as the group leaders need not be teachers, they need only to have been trained in group leadership techniques. Ninety-two percent of the group leaders were men, 8% women. Their mean age was 30, with the highest percentage falling in the 21-25 age group; 55.6% had reached standards V-VIII; 27.7% had reached standard IV or below. The largest proportion (46.7%) were teachers, followed closely by farmers, who made up 40%. Other occupational categories (such as TANU officials, office workers, artisans, civil servants) amounted to 13.2%.

One point which stands out most clearly from these figures is that a surprisingly large number of group leaders (40%) were farmers, although many of the organizers were expecting a much higher portion of the group leaders to be primary school teachers or perhaps voluntary literacy teachers. An interesting experiment in another campaign would be to study the difference between the functioning of groups which were run by school teachers and those run by others.

The educational standard of the group leaders is somewhat higher than for the group members although a remarkably small number of them have more than standard VII or VIII (17%). This again is encouraging as it confirms that advanced schooling is not a necessary asset for group leaders.

4.7 Knowledge Gain Test Results

Of all the methods used in the evaluation of the campaign, this method proved the most difficult to carry out. Out of 50 groups selected for testing, only 17 groups (with 97 member) finally submitted both the pre-test and the post-test.

The range in results for the pre-test was 20% to 100% with a mean of 72%. The range for the post-test was 50% to 100% with a mean of 83%. Thus the difference in means was 11%. The significance of this difference was measured using a "t" test; the score obtained was 4.62, thus showing the difference to be significant at better than the .01 level. In other words it can be safely assumed that the increase in score on the post-test was due to something other than chance. Another way of looking at the knowledge gain test results is through individual progress. Forty-eight individuals improved their score: 38 had the same score, and 10 lowered their score.

The analysis of scores showed that those whose scores did not improve were those who had scored on the high side in the pre-test and had little room for improvement. What this means is that the 15% relative improvement was accounted for by roughly half of those taking the tests. A better test would have shown a wider range of scores and a more substantial knowledge increase.

If one takes into account that each group averaged 65%, that they met for about 6 out of 10 sessions, and that the sessions themselves were of about one hour's duration, then an 11% improvement seems quite good. It would have been interesting to have had a control group that spent the same length of time studying the material in a traditional classroom situation. Even without this we have clear evidence that people do learn using this method.

4.8 Campaign Costs

An important part of the evaluation of the campaign is the total cost of the exercise as well as the distribution of the costs in various expense categories. In a campaign such as this, some of the accounting has to be estimated because many expenses were either hidden, or were taken up by other organizations. The Institute of Adult Education was the main organizing agency and as such incurred the bulk of the expenses. Other organizations, however, did contribute both time and money. The Cooperative Education Center and its wings distributed materials and cooperated with seminars. The District Adult Education Officers arranged most of the second stage training seminars, distributed much of the material and reproduced report forms in addition to supervising the groups in their areas. Much of these expenses have not been included because it falls within the normal limits of their jobs. Tanzania is fortunate to have a network of adult education officers throughout the country who could work so effectively in organizing study groups.

The expenses listed therefore are those incurred by the Institute of Adult Education and by other agencies involved in the campaign. What we have not included as costs for this campaign are the salaries of the various Institute staff members who were not working on the campaign alone, and in fact would have been paid salaries whether

TABLE 1

Campaign Costs (Wakati Wa Furaha)

	Item	COST Tz shillings	US Dollars
1	Production of study material		
	Textbook, study guide and radio programmes		
	Fees and extra salaries	1,960	274
	Illustrations and enlargements	89	12
	Duplicating paper (100,000 sheets)	3,200	448
	Stencils (200 at 1s. each)	200	28
	Travel claims	470	65
		5,919	827
2	Publicity		
	Printing of posters by the Ministry of Agriculture	34,000	4,761
	Production of quiz programmes	120	16
	Travel claims	48	6
		34,168	4,783
3	Stage 1 training		
	Duplicated training materials (see section 1)		
	Board and lodging	3,708	519
	Travel expenses	3,310	463
	Allowances	1,600	224
		8,618	1,206
4	Stage 2 training		
	Duplicated materials (see section 1)		
	Board and lodging (666 people at 9s. each)	5,994	839
	Travel claims for DEO's (stage 2 organisers) 100 miles x 73 seminars x .80 per mile	5,840	817
	Travel expenses for participants (for 50% of 1,854 at 2s. each)	1,854	259
	Allowances for DEO's (estimated 1 day and 1 night at 30s. each for 73 seminars)	2,193	307
	Books distributed free of charge (textbook and study guides)	14,667	2,054
	Distribution expenses	724	101
		31,272	4,377
5	Evaluation		
	Fees for field interviews	416	58
	Part-time statistical assistance	1,000	140
	Supervision of groups	216	30
	Travel claims for pre-testing	22	3
		1,654	231
	TOTAL COST	81,631	11,424
	Cost per participant	4s	$.50

they worked on it or not. It would be necessary in planning a similar campaign to be aware of the rather large staff commitment made to this campaign. It was estimated that the planning, production, distribution, supervision, and evaluation of Wakati wa furaha took 40 man-months. At various times there were from two to eight staff members working full time on the campaign. Table One summarizes campaign costs other than those of regular staff time.

One of the most expensive items in the campaign was the printing of the publicity posters. This expense was carried by the Ministry of Agriculture and represented 40% of the entire budget of the campaign, while the value of these posters was negligible. Most of the recruitment for study group leaders and group members was done by the organizers who would have been as successful without the posters.

Of the remaining expenses, the largest single item was the purchase of the textbook used in the campaign, edited and assembled by the Institute of Adult Education and printed by the East African Literature Bureau. It was estimated that the unit cost of the textbook was about 4.25 shillings for a run of 2,000. It was hoped that in the future the cost per book might be cut down to about one shilling per copy by using a simpler format, fewer pictures, and cheaper paper.

4.9 Conclusions

Not all aspects of the campaign, of course, were successful. The delay in the distribution of textbooks and study guides was serious; over 50% of District Adult Education Officers reported that they did not receive their copies in time for the start of the campaign, and a few received no materials at all. (In contrast, few cases were reported of groups being hampered by lack of radio sets, and it seems that radios are sufficiently well distributed in rural Tanzania to allow continued dependence on volunteer radio owners in the future.) It was also clear that supervision of groups, too, was inadequately provided for and would need to be better organized in later campaigns.

In other respects, however, the Wakati wa furaha campaign achieved a large measure of success. First, the fact that groups were established all over the country, encompassing about 20,000 members, and that letters continue to be received from the public on the subject of the campaign, indicate that interest was aroused on a national scale. The campaign was also successful in reaching its intended audience, the rural section of the population--whose need for education was greatest--as evidenced by the high proportion of farmers among both members and leaders of groups.

Another area which was felt to have been satisfactory is that of training. This was the first time that a two-stage training program had been tried and there was doubt about how much slippage there would be between the first and second stages of training. One of the indications of the success of this training is the high rate of return of

registration forms and the success of nearly all groups in filling in correctly the somewhat complicated attendance forms. Considering the many papers and documents that each group leader was presented with, the fact that so many followed the instructions very closely is an indication that the messages at the second stage level were presented clearly.

The final area in which results seem to be positive is the effectiveness of the radio study campaign as a learning method. The evaluation provides evidence that in fact people can learn from this method. This had been assumed to be the case in the past, but the statistically significant improvement in scores from the pre-test to the post-test gave an assurance that at least some facts about the ten years' progress since Independence had been learned, and provides us with a starting point for measuring the succes of other campaigns.

5. MTU NI AFYA 6/

The Mtu ni afya ("man is health") campaign was the first radio study group campaign to obtain mass proportions. All of the previous campaigns had been training grounds and pilot projects for the massive undertaking of mounting a truly national health education campaign. The subject matter, preventive medicine or community health, was chosen because it was part of Tanzania's health strategy that more emphasis shoudl be placed on community medicine, on building up a healthy environment and preventing disease from occurring, rather than only on curative services which leave the population's attitudes and habits regarding health unchanged.

The campaign had three objectives:

1. To provide information about the symptoms and prevention of specific diseases;

2. To increase participants' awareness and encourage group actions regarding measures which groups and individuals can take to bring about their own better health; and,

3. To encourage the maintenance of newly acquired reading skills by providing suitable written follow-up materials to those who have participated in the national literacy campaign.

There were two major differences between this campaign and previous projects. The first was that of scale. The Mtu ni afya campaign was designed to reach about one million adults living in ujamaa villages and districts which had undergone a drive to eliminate illiteracy in 1971. The actual number of people in groups was finally estimated at the end of the first phase of the campaign at about two

million people. One million copies of each of two books were prepared for the campaign in accordance with the original goal of giving one to each participant. In the end each person had to share a book as the popularity of the campaign went far beyond expectations.

The second major change was the emphasis on action. The previous campaigns were designed primarily to mobilize people to participate politically, but did not emphasize collective or individual activity in changing the physical environment and living conditions of people in rural areas. The training of the 75,000 group leaders in the Mtu ni afya campaign emphasized the move from discussion to action. Group leaders were encouraged to give suggestions as to what the groups might do in their village to improve health conditions. It was suggested that each group leave behind some monument to good health--new latrines, a clean water supply, or similar tribute to their group's activities.

5.1 The Groups in Action

The information in this section is based on two main sources; the interim evaluation reports, based on short evaluation tours carried out in July, 1973, and the more detailed supervision reports filled in by local supervisors after visits to 2,131 groups.

The sequence which study groups ideally followed during the campaign was as follows:

1. The group assembles during the gathering time while the radio plays music related to the campaign, political songs, poems and short announcements.

2. The group members listen to 20 minutes of radio program.

3. The group leader, or someone in the group who can read, reads aloud the appropriate section of the text.

4. Discussion begins first with the question of the relevance of the material presented for each particular group.

5. If the information presented for the day seems important, resolutions are made by the group as to what they can do to prevent the given disease.

6. After the group has met, some time during the week between meeting times or even later, members take up the actions resolved either in their own homes or in the area together with others in the group. In practice there were many variations on this pattern. The major difference in about half the groups was that there was no

radio to listen to at all. In some parts of Tanzania the reception was too poor to allow good enough audibility. In still other groups there were no radios available and from time to time even those groups with radios had breakdowns. In cases where there were no radios available the group leader usually made a presentation based on the appropriate material found in the text. The section of the text which was to be studied each week was indicated in the study group leaders' manual, which provided detailed instructions for preparing the weekly sessions.

In some groups, those in which the full idea of this study group method had not been understood, the study group leaders took up a teaching role and gave straight health talks after the radio programs were over, using the books as a source of information and sometimes going on so long that the group members did not have an opportunity to discuss the material themselves. In some areas again the groups were too large to allow proper discussion. In groups with 75 or 80 people the group leader in his report often tried to explain the situation by saying that, "although only a few actually participated in the discussions, everyone participated in the implementation of the resolutions." This is obviously a situation to be avoided. The success of this method of learning, the organizers felt, depended on the ability of group members to involve themselves in an active discussion of how what is being talked about related to their own particular situation. One aspect of the evaluation, therefore, concerned the actual amount of discussion that did go on in the groups.

Supervisors observing Mtu ni afya sessions were asked to mark the number of people out of those attending who made contributions to the discussions. Those who made at least one comment were counted. Reports came in from 1,924 groups visited in nine out of 18 regions of Tanzania, and in these the average proportion of active participants was 58%. In trying to assess whether this figure is a good result or not, it is necessary to remember that the pattern in other adult education classes in Tanzania is that the adults' participation is usually in the form of repeating words or sentences, as most of the adult education in rural areas is literacy education. Repetition of words or phrases is not the kind of participation that Mtu ni afya has encouraged. Rather it has been the kind of participation that should take place in other ujamaa village meetings, where people are accepted as all having something substantive to contribute to the discussion at hand. Mtu ni afya group discussions are ideally like the lively discussions held in a village when a new project is about to be undertaken, not just a repetition of what a teacher standing in front of a class says.

Considering the fact that most of the groups in fact had a larger enrollment than the recommended 15 members, a percentage of 58 participating in some way in the discussion might be considered quite

good. If one also takes into account the fact that this kind of discussion group is different from the kinds of education that most people have been used to, then this figure is respectable.

What also seems clear, however, is that if discussion of the relevance of this material and full acceptance of the symptoms of disease are to take place, then the necessity for discussion, and the conditions favorable for discussion, must be stressed still more. The size of groups must be kept to a smaller number; this implies more group leaders. The group leaders themselves need more training in the method as it is natural to fall back upon patterns of teacher-student relationships which are more familiar, but less useful.

5.2 The Kinds of Activities Carried Out by Groups

Emphasis on action was one of the major differences between the approach used in Mtu ni afya and that of Wakati wa furaha. During the training of the group leaders the idea was stressed that every group should leave behind some kind of health monument. There should be some physical evidence of environmental change as a result of the health campaign. The outcome of the group discussions was hopefully a decision by the group to undertake some kind of project which involved action by members either individually, each in his own home, or collectively, as a group within the community. There were included in the notes for each meeting in the group leaders' manual suggestions for projects which were useful in preventing the disease discussed that session. Many groups, however, after analyzing their own conditions, took actions which were not suggested, but were, nevertheless, useful and effective.

In a later part of this report we look at the effects of the campaign on the households in eight villages which were the focus of a special study both before and after the campaign. In this section we are describing some of the most common kinds of activities based on reports from campaign staff and the supervisory reports from 2,131 groups. In the supervisor's report form there was a space to indicate what resolutions the group had made following the session visited and what actions had actually been implemented as a result of the discussions. The following list indicates the type of activity most commonly carried out by the groups supervised and the percentage of groups carrying out each item (some groups took on more than one activity).

Removing close vegetation and cleaning the areas around each house	28%
Digging, repairing or rebuilding latrines	20%
Destroying containers of stagnant water	19%
Boiling and/or filtering water	12%
Cleaning areas around water sources	11%

Draining pools, ponds of stagnant water	5%
Using malaria preventive tablets and/or insecticides	5%
Digging rubbish pits	4%
Digging wells	3%
Building racks or stands for eating utensils	3%
Avoiding group use of drinking containers and cigarettes	2.5%
Putting bedding in the sun	2%
Covering food	1.5%
Collecting materials for construction	1%

As the supervision reports were for the most part carried out during the early parts of the campaign, they reflect activities relating to the first sessions. Malaria, for example, was the subject of the first two weeks' works, and over 1,200 of the group actions reported were concerned with the prevention of malaria. The strategy involved in the lessons on malaria was first to establish the fact that a mosquito is the carrier of malaria; this fact had not been known in Tanzania at grassroots level before the camaign. During the training seminars for study group leader it was not uncommon to hear someone say "I never knew that malaria was caused by this mosquito." It has also been common to call malaria under a wide variety of local names, and treatment was correspondingly different. Once the mosquito was identified as the carrier, the next step was to destroy its breeding places. Much of the activity by groups convernin malaria has been in the destruction of these breeding places. One finds, therefore, many people clearing large leafed plants from near the house, destroying containers, broken pots or old tins which hold standing water, and even draining ponds and larger pools of water when necessary.

A second activity stimulated by the campaign was the building of latrines. While the sample of supervisors' reports showed that 20% of groups visited engaged in building or repairing latrines, in some parts of the country the building of latrines took on truly miraculous proportions. In one district reports showed that every house had its own latrine! This particular latrine-building campaign was started off by local TANU officials, who included the goal of a latrine for every house among their development targets for the district. The campaign was strengthened when the dry season came and the vegetation that had provided privacy previously was harvested. Irritated reports from villagers were heard about neighbors who slipped into nearby latrines at someone else's house rather than build their own. In one village a man discouraged his neighbor's use of his latrine by putting a padlock

on the door. The neighbor promptly built his own. In another area, people decided that having a latrine at every house still left many areas lacking. What, for example, could travellers use while waiting along the side of the road for buses? It was agreed that one latrine should be built at each major bus stop in the area.

It would not be an exaggeration to estimate that hundreds of thousands of latrines were constructed in Tanzania as a result of the Mtu ni afya campaign. If this trend is continued on such a large scale, it must affect the incidence of diseases transmitted through human waste. Most specialists in preventive medicine rate the provision and use of latrines and the availability of sufficient quantities of safe water as two major paths towards breaking the cycle of disease spread in rural areas.

The availability and treatment of water attracted a lot of attention from the study groups. In some areas of Tanzania the digging of wells was carried on in the same mass spirit as latrine building. In the survey of groups visited, members in 253 groups were reported as having begun boiling and/or filtering.drinking water. The figure of 11% carrying out this activity may be high, of course, as it is difficult to check its reliability. What the figures do show, however, is a relatively high awareness of the importance of safe water to good health. This impression has been confirmed elsewhere in an independent study of self-help water schemes (Tschanneral, 1974). There does seem to be a growing awareness in many rural areas since the Mtu ni afya campaign of the connection between water and health. There is, however, it might be added, a common misconception that all piped water is safe water. The distinction which the campaign tried to make between "clean" water and "safe" water has proved to be a difficult concept, when both waters may appear the same to the unaided eye.

A fourth area of activity concerned the prevention of tuberculosis. The main points in the prevention of tuberculosis mentioned in the campaign literature and programs concerned vaccinating everyone, especially children, enlarging the windows of houses to allow more light and ventilation, boiling cow's milk, and the avoidance of spitting in public areas. In area after area, however, after discussions on how the disease was spread from the spittle of a contagious person, other actions, not set out in the campaign material, began to appear. It is common in most parts of Tanzania to drink local alcoholic drinks out of a common container, which is passed around a circle for each person to take a drink. Many groups decided in discussion that this was one very good way to come into contact with tuberculosis. In many local beer shops people began to use separate containers for drinking, even though this went against well established custom. The sharing of cigarettes was also noted by several groups as a bad habit, and this too was halted in some areas.

A story was heard from one group which particularly reflects the spirit in which the groups worked. One afternoon the group members had assembled for Mtu ni afya around the school teacher's radio set. The subject of the week was tuberculosis. The group members listened to the radio, studied the material in the books, and began discussing these symptoms to see if they could agree that this was a health problem in their area. As they talked, they realized that one of their own group seemed to have the very symptoms. They talked about what they should do and finally came to a decision. The health of this group member affected the health of not only other group members but also of their neighbors as well. The group decided that they all had some responsibility to the community's health and took up a collection to send their study group colleague to a hospital for thorough diagnosis and treatment.

Other types of activity carried out in the spirit of Mtu ni afya were limited only by the imaginations of the groups. Some collected money to buy mosquito nets or malaria tablets. In one town the market place is now closed twice a week for a general cleaning by voluntary workers. Another town is shut down occasionally so that everyone can take part in picking up rubbish and general cleaning. While riding on a bus during the campaign, one member of the evaluation team reported that the bus passengers were shouting in a friendly way, "Open the windows--mtu ni afya--we don't want to suffocate!"

5.3 Problems

The groups did not always function smoothly, this is clear. Even when there were enough books and materials, other problems occurred, some of the more important of which are outlined here.

The first concerns the size of groups. In nearly all areas that reports were received from or where visits were made, groups were large, tending to have about 25-35 people instead of the recommended 15-20; there were many groups, even, with membership over 100. Clearly the amount of involvement and discussion that each person in such a large group can have is limited. Even in groups of 25 it is not possible for as full participation in discussion as is desirable to make sure that people are developing their own consciousness and abilities rather than being objectives of someone else's teaching.

Reasons why the groups were so large varied. In some areas the campaign proved to be more effective in mobilizing people to participate in groups than was first expected. Where the campaign estimates were for about one million people, the actual enrollment ended up as something like two million. This meant that the estimated 75,000 study group leaders who were trained were not enough. The other reason why groups were too large is that the adult education co-ordinators at ward level made use of the already organized literacy classes. It was no problem to allow the classes to take one of their meetings each week for

the study of health education subjects. The result was that the Mtu ni afya groups were the same size as the literacy classes. The Ministry of Education guidelines suggest a ratio of 30 adults to one teacher, an adequate ratio for standard literacy teaching, but not suitable for study group methods. In some areas the problem was made still more difficult because the literacy classes were used as a base from which to organize the campaign, but Mtu ni afya proved more interesting than the literacy program. This meant that classes which were already full at 30-35 people suddenly found themselves jammed with 50, 60, or even 100 due to the popularity of the subject. As there was emphasis in the campaign on involving as many people as possible, most organizers were more than happy to welcome the additional members without thinking about the implications of these actions on the effectiveness of discussion.

The second problem, the lack of enough tools, was often encountered when groups moved from discussion to action. In many areas the actions decided upon such as digging latrine, draining ponds, digging trenches for water pipes, or digging wells required an amount of spades, picks, or other implements that were unavailable in the group or the immediate area. In such cases requests were made to various local extension officers to supply the necessary materials. In most cases the problems resolved themselves and necessitated a degree of cooperation among various extension officers from different ministries which itself proved to be one of the important by-products of the campaign. The campaign demonstrated that rural health could not be the concern of only the health or the adult education personnel. Rural development field staff and other officials also became involved.

A third problem was the shortage of textbooks and group leaders' manuals. By the third week of the campaign it was clear that the response to the campaign was much larger than expected, and that the one million copies of the two books used in the campaign were not enough. If the expansion of the campaign had been even in all places this would have meant that two people would share one set of books. As it happened, however, enrollment in some areas was more than twice as large as expected, and in a few groups there was only one book for the entire group. In contrast, there were one or two districts with an excess of books. Due to the nature of the reporting systems in adult education, however, it was not possible to learn about these until after the campaign was well under way. Communication between districts runs through regional headquarters; consequently, there were cases where two adjoining districts, belonging nevertheless to different regions, were unaware of each other's book situation. Problems of this sort can be solved in another campaign.

5.4 Conclusions on the Groups in Action

In general the amount of participation in discussion by members of groups was not as high as was deemed desirable by the organizers of the campaign in the beginning. The reasons for this can be

summarized as being the larger than expected size of the groups and the difficulty experienced by some group leaders in managing such large groups. If one considers, however, the more common pattern of adult education classes in Tanzania, the number of people participating in the discussions is a very encouraging step forward. In any case, the reason for stressing discussion was that it was felt to be the best way to involve people in decisions to take action on making changes for their own development.

If getting the groups to move from discussion to action was one of the objectives of the campaign, then it must be said that the campaign succeeded, and indeed surpassed the expectations of the organizers. As reports began to come in on the kinds of activities which were carried out in the various regions and districts it was clear that the message that mere discussion alone did not constitute the entire activity of the group had been accepted, perhaps even taken over by the people themselves in the groups. The various reasons why this campaign has worked to promote action rather than merely discussion are numerous and will be taken up in the concluding sections, but one at least should be mentioned at this point--namely, the fact that a great many people did realize that there was a difference between the kind of learning that was going on in the Mtu ni afya campaign and the kind that has gone on in other adult education programs.

It is not possible to estimate accurately the total number of man-hours which went into acitivities to improve the health environment in Tanzania. But if one takes the example of latrines alone the labor mobilized is staggering. Assuming, for example, that one latrine takes 50 hours to construct and that a reasonable estimate for the entire nation would be 750,000 latrines constructed, the number of man-hours mobilized as a result of the campaign is 37.5 million. If the Ministry of Communication and Works had had to pay to have this work done at a rate of one shilling per hour, the cost would have been 37.5 million shillings. Bearing in mind that the campaign costs about 1.5 million shillings, this represents an effective economic tool, and when one realizes that latrines were only one of the activities of the groups, one can begin to see what the impact of this campaign has been.

5.5 Knowledge Gained

The instrument used to measure the amount of knowledge learned was a short 13-item multiple choice test that was administered orally by the study group leaders at the beginning of the campaign and again at the end. Control groups were selected in each of the areas where the testing was conducted. The control groups were adult education classes which were studying some subject other than health education. In addition to the control groups, the test groups were split into groups operating in ujamaa villages and groups somewhere else. We were interested in seeing if there would be differences in the scores between

these two types of living situation. The feeling of most adult educators was that the ujamaa villages are better organized and motivated. Attendance in adult education activities is usually better here than in non-ujamaa villages.

The information which has been analyzed attempts to answer three questions. First, was there a difference in the scores of the pre-test and the post-test? The assumption in this question is that a gain in score would indicte that some learning of facts about health had taken place. This was in fact the case; the average score on the pre-test was 43% compared to 63% for the post-test, showing relative improvement of nearly 47%. The difference between the pre- and post-test scores was found to be statistically significant as indicated by a "t" test at the 0.05 level.

Second, was there a difference in the amount learned between the Mtu ni afya groups and the control groups? Here, we begin to run into some difficulties. Perhaps the foremost difficulty in selecting a control group, during a campaign of this type which is supposed to mobilize everyone, is to find a group which has not taken part in the campaign in some way. In earlier campaigns, for example, no control groups were chosen because it was said that in a national campaign of this sort all people had a right to participate in health education. The control groups taken together gained 8.5 from 44 to 52.5. This represents an improvement of 19.3%. The Mtu ni afya groups improved by 46.5% to the control groups' 19.3%--a clear and statistically significant difference.

The third question was whether there was a difference in the amount learned between groups in ujamaa villages and groups elsewhere. As mentioned previously, there was some reason to believe that groups in ujamaa villages could score bigger increases in the amount of knowledge gained than groups in other areas. One reason for this belief was that the decision to move into an ujamaa village demonstrated a higher than average level of political motivation, and a certain willingness to participate in national programs and projects. Second, the ujamaa villages are better organized by the various extension officers because houses are located near each other and because the Party and government usually give support to efforts of this sort.

In fact the evidence shows that, overall, groups from ujamaa villages scored a 23 point gain in scores compared to a 16 point gain by those groups in non-ujamaa areas, a difference that was found to be significant to .05 level using a modified "t" test: however, scores from individual villages varied considerably, and in one area the non-ujamaa groups did better than those from ujamaa villages. So while we can show a difference between the two groups, we cannot conclude that this pattern holds for the entire nation. The sample used was small and groups were not originally matched in such a way as to eliminate sources of bias. However, the difference between the two groups is significant

enough for one to conclude that there is now good reason for the Institute's research department to look into the question of the best atmosphere for effective adult education in somewhat more detail.

5.6 A Note on Changes in Health Practices

Of particular importance to the campaign was the measurement of change in health practices. In a survey done of eight villages before and after the campaign, a series of twelve observable health practices such as the presence of a latrine, the use of the latrine, absence of broken pots, and pools of stagnant water were combined as a health practices index. Each household was surveyed and could score between 0 and 12 depending on the number of positive practices observed. Before the campaign the mean health practices index for all houses in eight villages (2,084) was 3.6, or over three out of twelve positive health practices observed. After the campaign the mean index was 5.5, a 60% improvement. In real terms this means that each house in the entire sample improved their health environment by changing nearly two negative health habits into positive ones. The largest change came from the digging and construction of pit latrines and the clearing of vegetation from the immediate vicinity of the house. There have been reports of a large increase in the number of people attending rural dispensaries in many areas, and incomplete reports from one district medical officer indicated a decrease in the number of malaria cases reported one month after the program on malaria had been broadcast.

The final evaluation of any health education campaign must lie in the reduction of the incidence of disease. Provision for measuring the reduction in disease level was not made in the evaluation of this campaign as the isolation of the multiple factors associated with good health would have proved impossible given the nature of the campaign and the records available. There is, at least, proof that a large number of people participated in the campaign, that people learned from this method and that literally millions of hours were put into environmental changes as a result of the campaign.

5.7 Finance

While a complete breakdown of expenses is not possible at the time of writing, an estimate of costs can be made. The entire campaign was run with an additional capital input of 1.48 million shillings (about US$210,000). A grant for this amount was provided by the Swedish International Development Authority (SIDA), and represents roughly 1.1 shillings per participant (assuming 65% attendance). The largest expense was the provision of printed materials. The campaign produced one million sets comprising two 48-page illutrated books at a cost of just over ten US cents per set (0.75 shillings). This was well below the cost projected on the basis of the Wakati wa furaha campaign textbook. The total printing bill including posters and group leaders' manuals was over 800,000 shillings (approximately US$140,000). It

might be added that the campaign did not provide radios or batteries to groups. Even if all costs of staff time, petrol expenses, travel expenses for individual group leaders, and local distribution costs were added in, the total cost would have been about US$610,000 or $0.47 per participant.

6. NOT THE END OF THE STORY

The last part of this story of radio study group campaigns in Tanzania speaks for itself. To have brought about an average 20% increase in knowledge of vital health practices among two million citizens needs no justification. At the same time to have caused a vast increase in the building and use of latrines all over the country is a practical achievement such as few educational campaigns can boast.

The worth of these campaigns is also proved in several additional compelling ways. First, the method has proved its effectiveness in reaching large numbers of people in rural areas who have previously not been reached by either formal education or traditional adult education approaches. As an educational approach it offers a practical alternative to the traditional student-teacher relationship. The emphasis in the method is on complete and equal participation of all group members in exploring the relevance and importance of the information distributed by aid and print to the reality of each group's existence. This joint exploration results in creation of knowledge which has existential meaning for each of the people invited.

Additionally, the method has particular relevance for Tanzania as Tanzania's development strategy emphasizes the people's involvement in the discussion of the development plans which will affect their lives. The TANU party guidelines of 1971 state that if development is to benefit the people, the people must participate in the planning of their own future.

The campaign method has further demonstrated its flexibility. Three of the Tanzanian campaigns have covered political education subjects while the last has been on health. The next phase of the Mtu ni afya campaign will begin in 1975 and will emphasize nutrition, food production, and child care. On a limited basis the method is being used to teach bookkeeping, the principles of ujamaa and how to run a primary cooperative society.

The final advantage is the economy of the method. The total per capita cost of the Mtu ni afya campaign, at $0.47 per active participant, exemplifies the radical savings that can be obtained through the selective and combined use of mass media and group interaction.

From the detailed accounts of the last three campaigns in Tanzania (1970 to 1974) and from the briefer reports of the earlier projects, certain general features emerge. The more important of these features are worth summarizing as a conclusion to this chapter because of the possible impact they may have on plans to launch similar projects elsewhere.

First of all, the projects in Tanzania since 1969 have brought together several different institutions in order to ensure both that the teaching materials drew on the most expert and up-to-date information and ideas available on each subject and also that groups were organized to take part in the campaign in as many places as possible. This multi-institutional approach contributed enormously to the quality and to the spread of the campaigns. No one institution could have commanded the many and varied resources that were made available. It has at the same time necessitated the development of an effective coordinating machinery to make sure that all the contributions were available when they were required and that the different contributors were informed of and conversant with their own roles and those of the other institutions in the overall campaign.

That such coordinating machinery could be developed in a few years has been due in large measure to the particularly favorable climate of official and political opinion towards adult education - especially to adult education for rural areas - which prevails in Tanzania. The combination of the nationally important events on which the first three campaigns were run and the enormous impetus towards adult education development which were given by the political decisions to make 1970 and 1971 'Adult Education Years,' helped to make the method acceptable and encouraged the many institutions involved to find a way of coordinating their efforts. Without the support and goodwill of these institutions, including in particular TANU and the Ministry of National Education, the campaigns could never have reached the mass audience for whom they were intended. Tanzania's particular political approach to adult education is not necessarily a pre-requisite of campaigns of this sort and this size. But it is essential that effective coordinating machinery exists and that the campaigns have the goodwill of an elaborate network of field extension educators.

There is another condition imposed by the multi-institutional approach. The planning and preparation period must naturally be longer than if a single institution were preparing everything itself. The election study campaign, with only 160 groups, took nine months of planning and preparation, and Wakati wa Furaha, with nearly 2,000 groups, took 10 months, and suffered serious setbacks from delays in delivery of the printed materials. Mtu ni afya, which reached approximately two million people in 75,000 groups, began to be planned nearly 18 months in advance.

Tanzania is by no means the only country to use radio study groups, or forums, as a method of adult education. Canada, India, Ghana, Sweden, Botswana, Togo, and many other countries have developed similar projects, with varying degrees of success. (For an excellent report on the Botswana campaign, see Colclough and Crowley (1974).) Most of these countries have attempted to make the forums into a continuing institution of social and educational life, and the programs into on-going weekly commitments. Tanzania decided to adopt a campaign approach; each series is planned to last for a specific period and substantial effort and planning is devoted to pre-program training and group preparation in each occasion. One of the problems of radio study groups (Ohliger, 1967) is that after the initial enthusiasm the interest in and therefore the attendance at forums tends to decrease, and that such projects therefore have a limited life span. The Tanzanian campaign approach, which sets definite limits on each series, and starts again with a new or follow-up series and a new publicity campaign after a fallow period, may be a partial solution.

Another major point emerging from the continuing study of the campaigns is that the impact of these campaigns--and this is truer still for mass campaigns than for more limited efforts--is much wider than the actual numbers who enroll or attend the group discussions. The Mtu ni afya campaign for example in Dodoma showed attendance patterns similar to other parts of Tanzania, which means that about 25% of any village may have been taking part in the weekly meetings. Because of these discussions, the village committees in many places made decisions that the entire village put into effect such practices as improving the water supply or calling for each house to have a latrine. The mass campaign, it would seem, bring an additional set of advantages to what is by now a quite well accepted development approach.

While the Mtu ni afya campaign is the most recently analyzed campaign, the subsequent campaign, called Chakula ni Uhai (food is life), which began in June 1975, has made several improvements on the early work. There has been, for example, a much closer link with the health infrastructure so that village health committees will be tied more directly into the network of newly built mother and child care clinics. In addition, this campaign has stimulated the establishment of communal feeding programs in some ujamaa villages, and the opening of subsidized canteens at the place of work in some factories in Dar es Salaam.

Two major problems, however, persist throughout the Tanzanian experience to date. The first is the problem of distribution of materials and the second the question of feed back and follow-up of learning (or teaching). By the nature of the media used, the materials go out from the experts to the students, are discussed and explored by different groups of students, but cannot be immediately reinforced or corrected if inadequate.

First, the question of distribution. This is primarily an organizational problem, but it is a big one, and can be a matter of program success or failure for particular groups. In each of the campaigns described here there are reports of many groups that received insufficient books, study guides, or group leaders' manuals. At the same time the evaluation reports emphasize that the printed materials were an essential part of the study process. It follows that where the materials were not received the learning process was seriously affected. There seem to be two points at which the distribution system breaks down. First, there are underestimates of the numbers required (and by the nature of this mass education method it is extremely difficult to predict the size of the audience; more reliable estimates can presumably only be made as experience of the campaigns accumulates). Second, there are failures of communication between the central organizers and the field distribution points on the one hand, and among the different field distributors on the other hand. The field distributors could often help each other out of difficulty. In both cases, time is at the root of the problem. This re-emphasizes the need for a long planning and preparation period before the campaign proper is actually launched and for close coordination between the preparing bodies and the field organizers.

A second difficulty with campaigns is that it is difficult to include in them an adequate method of feed-back and follow-up. This problem is particularly relevant to the use of the radio study group method in its most directly educational sense, usually on a more modest scale. Information when distributed, whether by radio or print, is inevitably liable to be misinterpreted, misunderstood, and even forgotten.

Two important characteristics of radio study groups are that they can operate without the physical presence of teachers or subject experts, and that they encourage equal and democratic participation by group members in the learning process. But, by themselves, they do not offer opportunities for poorly understood points to be explained, for mistakes to be corrected, or for additional information, when required, to be supplied. One possible answer is for the reporting system, which to date in Tanzania (with the exception of the CEC's projects) has been used largely for evaluation and administrative purposes, to be developed into a system of group correspondence education, such as the CED has itself pioneered. While this would require an elaborate correspondence set-up at the center, it would probably intensify learning and increase retention.

These conclusions are based on the experience of Tanzania to date. It has been an exciting story, and from the evidence of the Mtu ni afya project it has achieved some significant success. But it is not the end of the story. In addition to the second phase of the Mtu ni afya campaign of 1975 which emphasized nutrition, food, production, and child care, there are also tentative plans to spread the method more

widely to agriculture and other branches of development. Similarly, though smaller schemes are operating and are being planned in other countries, the Tanzanian experience, it is hoped, can serve as an encouragement, as well as a model for such future developments of mass education by radio study groups.

REFERENCE NOTES

1. This section is included with acknowledgements to the Editor of Educational Broadcasting International, for which it was originally prepared.

2. A Voice of Kenya Audience Survey in 1969 reported on the estimated listenership to programs prepared by Kenya's Institute of Adult Studies. These programs are broadcast in support of the IAS Correspondence Unit's primary teacher up-grading correspondence courses, many by their very nature are more directly academic and less topical than the programs of Uchaguzi ni wako. The survey suggested that there was a regular listening audience of 400,000, while there were only 4,000 registered students. There is no scientific evidence to show that such a ratio is valid for Tanzania but if it were applied it would suggest an audience, in this case, of 330,000.

3. In two of the largest groups, after listening to the radio together, members split up into several smaller groups, under different group leaders, for the discussion.

4. This section draws largely on the full report of the Wakati wa furaha campaign evaluation (Hall, 1973a) published by the Scandinavian Institute of African Studies in Uppsala for the Institute of Adult Education, Dar es Salaam.

5. These facts were determined mainly from the registration and attendance form.

6. An in-depth study of the Mtu ni afya campaign is being written by Budd Hall, and should be available later in 1977.

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CHAPTER IX

RADIO IN AN AFRICAN CONTEXT:

A DESCRIPTION OF SENEGAL's PILOT PROJECT*

Henry R. Cassirer

1. BACKGROUND OF THE PILOT PROJECT

A proposal to establish a pilot center for the application of various audio-visual media to adult education in Africa was presented by the Director General to the 1962 General Conference of Unesco which appoved it. A sum of $67,000 was earmarked for the budgetary period 1963-64, it being understood that further funds would be made available in subsequent budgets for a project to be carried out over a six-year period.

Senegal volunteered to be host to the project and to introduce a televison service exclusively devoted to educational purposes which would cover the city of Dakar and its environs. An agreement between Unesco and Senegal to launch the pilot project was concluded in 1963. The year 1964 was devoted to the installation and to the training of Senegalese personnel. The experiment proper did not begin until 1965.

Due to the novelty of television, to the problems of producing live and filmed programs, and to the need to organize fourteen experimental teleclubs composed largely of women, the first years of the pilot project were entirely devoted to experimentation with television and film. Programs dealt with health and nutrition, as well as with general

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* This chapter was first published in 1974 as No. 69 of Unesco's series of Reports and Papers on Mass Communication under the title "Mass Media in an African Context". The version appearing here has been abridged to focus on the sections that discussed radio. This material is based on information gathered in Senegal and from the files of Unesco as well as of both written and oral reports by Messrs. Henny de Jong, M.K. Trabelsi, Michel Bourgeois and Owen Leeming. The report could not have been drawn up, of course, without the close collaboration of the Ministries of Information and Rural Development of the Government of Senegal.

cultural and development issues of interest to the urban family. Broadcast in the vernacular Wolof, the programs developed a new grass-roots style which showed the way toward a truly native African approach to creating television and using it in the community. Initial experiments were also made to test the use of television for the teaching of literacy to factory workers.

Cinema production was started not only to supply inserts to the television programs, but to portray rural conditions through two documentary films. The project trained and assisted creative Senegalese film staff who then were able to use their experience to enrich the young Senegalese cinema through films dealing with the social reality of the country.

Educational radio broadcasting became the third and, from the point of view of massive impact, the most significant field of activities of the pilot project. Cinema had already given an image of rural conditions existing in an area close to Dakar; but reaching the rural audiences at large regularly through the cinema raised insuperable obstacles. Radio, on the other hand, was able both to reflect rural conditions and to communicate week after week with peasants throughout a large part of the country. Yet the use of radio was not an easy accomplishment either, as will be explained more fully.

The decision to establish a radio wing of the project was taken in 1965. But the problem of coordinating the efforts of the various ministries and technical services concerned with radio broadcasting and rural development proved difficult. Only through the personal intervention of the President of the Republic in February, 1968 were all services grouped in a new Ministry of Rural Development and Cooperation established with the broadcasting organization through a decree setting up an inter-ministerial commission for educational radio.

This commission met for the first time in June, 1968 and decided to limit the experimental phase to the "bassin arachidier", the region of Senegal where groundnuts are practically the only important crop. Sociological studies in this region prepared for the setting-up of radio clubs in 50 villages selected as representative of varying conditions. Test programs were recorded and played back through recorders to the villagers in order to determine the most suitable form for educational broadcasts. Finally, the "Radio Educative Rurale" was inaugurated through a special program broadcast on December 18, 1968.

Since the educational programs were thoroughly integrated into the activities of the broadcasting organization and had the full support of the "Animation Rurale", an agency of the Ministry of Rural Development, the termination of the pilot project did not affect its continuation. On the contrary, with growing interest in the impact of

"radio educative" on the part of both the villagers and the authorities, the experience soon spread beyond the initial target audience and became a major force in the life of Senegal. The relatively low cost of production and reception, the accessibility of radio programs in a large part of rural Senegal, and the continuous feedback from the audience to station and authorities assured the radio an influence and future far beyond that of the other "wings" of the pilot project.

2. CONTEXT OF THE PROJECT

2.1 A People's Radio

The television experiments, that took place in relative isolation, could explore new forms and styles going beyond established policies. But once the project went on the radio, it had to face nationwide economic and political realities in an effort to bridge the deep gap not only of knowledge but of credibility that separated the peasants from the authorities in Dakar. Handing the microphone to the people ran the risk that they might never let it go again.

The decision to launch rural educational radio programs, together with community listening and feedback to the station, was taken by the pilot project in 1965, and the start of the operation was planned for spring 1966. But in fact programs did not go on the air until the end of 1968. In other words, it took even longer to launch an activity that used existing radio facilities than to begin broadcasting from a television station that had not even been set up. The problems and obstacles to the establishment of the educational radio services, which seemed at times insurmountable, are rich in lessons for the future and reflect conditions found in most countries.

2.2 Setting the Stage

The principal difficulty lay in the fact, characteristic of all out-of-school education, that many different ministries and services had to pool their efforts if action was to be successful. They included the Ministries of Information, Education, Rural Animation, Rural Economy, Health, Technical Instruction and Popular Education, as well as the Societe de Developpement et Vulgarization Agricole (SODEVA), and the Office National de Cooperation et d'Assistance au Developpement (ONCAD). Each Ministry and service had its own interests, its own budgets, its own mandate. While Information was concerned with program output, it clearly had no means of organizing listening in the villages. "Animation rurale", on the other hand, which did have its local contacts, had neither the budget nor the competence to undertake radio broadcasting. The technical ministries were even less

directly involved in what was planned by certain Senegalese and Unesco authorities. It took painfully patient work to bring together the representatives of different ministries who prepared a first report, in 1966, on what was to be the "Radio Educative Rurale" (RER). In February, 1967 a working party was constituted to define its organization and program.

Even though this project received favorable support at the Ministry of Information, and was approved by the President of the Republic in October, 1967, it failed to make progress. The different services just could not be brought under one head. Perhaps it was even a certain reluctance to establish free two-way communication with the peasants that prevented some authorities from taking action.

Not until President Leopold Senghor was informed of these difficulties by the representative of Unesco, in December, 1967, could the way be cleared, at least in principle. Following this interview, President Senghor made two key decisions.

His first decision was to group the different ministries and technical services concerned under the authority of a new Ministry of Rural Development. The "Animation Rurale", henceforth separated from the "Animation Urbaine", now found its place with the former Ministry of Agriculture, with the administrations in charge of cattle raising, inland waters, fisheries and forests, as well as with the agencies for the organization and marketing of production (ONCAD and SODEVA).

During the discussion with the Unesco Mission, the President appreciated the urgency of coordination and information. As an example, he cited the fertilizer factory which was soon to be opened, but whose production would be useless unless the peasants were prepared to use fertilizers in the field.

The President realized the importance of radio broadcasting as a further tool for such education, providing it was based on the collaboration of all services concerned and reinforced their action in the field. He therefore took a second capital decision.

On February 28, 1968, the President took his second decision affecting radio; he issued Presidential Decree No. 68 226 which established an interministerial committee for educational radio, with the task of preparing general guidelines and regulations governing the production, broadcasting, and exploitation of educational radio programs. This decree was addressed not merely to the Ministry of Information and Tourism, which was in charge of the broadcasting organization, but to all administrations concerned.

Henceforth, coordination with the Radio was assured both within rural development and within Unesco.

Unesco was to provide the specialist in educational radio and the sociologist for the pilot project; the financial resources necessary for its evaluation; 180 receiving sets donated by Radio Suisse Romande; and a vehicle.

Radio Senegal was to provide a departmental head for educational radio and a full-time secretary; the part-time services of a producer, a sound engineer, and a technician for the maintenance of receivers; two furnished offices; use of a recording studio several times a week; a slot between 8 and 10 p.m. in the non-commercial broadcasting schedule, two or three times a week.

The "Animation rurale" was to provide a full-time educational worker, select the villages to take part in the project, organize listening groups and training courses for the group leaders, and provide a cross-country vehicle.

Of the several possibilities offered, it was decided that the project would be concentrated on the administrative regions of Thies, Diourbel and Sine Saloum, covering the major part of the groundnut growing region, where both the type of agricultural activities practiced and the language spoken or understood (Wolof) were largely uniform. The priority accorded to the groundnut growing region was justified, from an economic point of view, by the importance of groundnuts in Senegal's external trade (70% of total exports).

The programs were to be particularly concerned with new farming methods and the diversificatin of agriculture and with the administration and management of cooperatives; the results were to be evaluated by means of later surveys.

2.3 Problems and Attitudes of the Peasantry

The selection of the villages where the initial radio forums were to be set up, and the detailed study of rural conditions to which the broadcasts would have to respond, constituted an essential base-line survey under the responsibility of the sociologist of the project, Mr. Farah N'Diaye.

The survey established that the "bassin arachidier", the groundnut region of central Senegal where the experimental radio clubs were to be created, constituted a largely homogeneous region ecologically, economically, and linguistically, although particular conditions varied from village to village. Radio listening was already well

established. "In most villages, there are from two to ten transistor radios for every ten compounds, which proves that radio has a considerable foothold, at least as far as the zone covered by the educational radio project is concerned." (N'Diaye, 1969, p. 34.)

Particularly interesting is the analysis of awareness and knowledge specifically in connection with the reimbursement of agricultural debts (N'Diaye, 1969b). Despite eight years of experience with the cooperatives and constant educational information efforts by the competent services, it was found that the peasants understood the problems only very inadequately.

This lack of knowledge is due not so much to lack of information as to the fact that few peasants take a responsible part in development tasks.

"The agencies play the dominant role ... Thus, one has the impression that whilst the Senegalese peasants are well aware of their duties, they are ignorant of their rights. They know what they must do, but not what the State must do for them."

The survey recommended, therefore, that educational broadcasting should above all be "oriented towards explaining the specialized institutions responsible for the execution of government rural development policy."

The information gathered during the survey made it possible to prepare the organization of radio clubs and to determine the principal objectives of the programs.

At last, a special program prepared with the directors of the radio system, of the "Animation rurale" and of the pilot project marked on December 18, 1968 the official opening of the RER.

2.4 The "Malaise Paysan"

It is only thanks to the President's continued support for frankness and free communication, to his opposition to every form of veiled censorship, that the "Radio Educative Rurale" was able to obtain great popular success and to make a deep impact on government policy. The letters that came in from the countryside were circulated to all government officials in a mimeographed, confidential publication entitled DISCOO. 1/ The first to draw on them for information on what really went on in the country was the President himself. On March 26, 1969, he addressed the Economic and Social Council on the economic perspectives of the 'malaise paysan' in the groundnut regions, due, in great measure, to the decline in the profitability of groundnuts."

In the oral version of his speech, the President made reference to DISSOO, acknowledging it had enlightened him about the woes of the peasants, about their "malaise", and led him to hope that, "at the moment of distribution of the dividends, a little more justice will be done towards the producers who have been sorely tried during recent years."

The key-note of his speech was an appeal for increased efforts towards a diversification of Senegalese agriculture, with emphasis on such crops as rice, cotton, sugar and tomatoes, as well as a "recasting of the traditional farm structure."

Public recognition of the "malaise paysan" by the head of state was now echoed all down the line of political and administrative services, and above all among the peasants themselves. An analysis of rural problems, based on the reports from the villages, reveals at least seven major causes (Bourgeois, 1971).

1. First of all, there is plain hunger after three years of drought that frequently has thrown the peasant back on bare subsistence farming in a desperate effort to survive.

2. Secondly, it is frequently the groundnut cooperative that is called into question. It is felt to be a foreign institution, for which the peasants do not feel responsible.

3. Third cause: the falling price of groundnuts on the world market.

4. Fourth cause of difficulty in the rural world is the peasants' debts, which are sometimes excessive. More particularly, however, the peasants complain about the disturbing or even brutal manner in which debts are collected.

5. Fifth problem: the joint-liability sureties into which the peasants enter. Although the principle may be good, numerous abuses are committed under its cover by bad payers.

6. An important additional cause of the difficulties of the peasant, as revealed by the educational radio: the multiplicity, complexity, and dishonesty of the administrative institutions.

7. Finally, beyond the economic and administrative issues, there are health and social problems that weigh upon the peasant. Health advice is much appreciated and takes perhaps too small a place in programs for a population where half the children die before the age of four and sickness is widespread.

Social issues go frequently to the root of government and human relations, and can arouse as much fury as any. At a time when Senegal was going through a period of hardship and deprivation, an austerity law forbade excessive spending on festivities for such occasions as marriages and baptisms. But here is what one village had to report:

"Now we are very sad, I and my comrades, because the law concerning the family code is no longer respected or has never been respected in our district....

"As far as marriage ceremonies are concerned, it is a catastrophe. I will give you an example which I have seen. I have seen with my own eyes an old man, a big merchant who has even made the pilgrimage to Mecca, give, quite recently, on December 24, 1969, to Mademoiselle Maimouna, as a first gift, the following things:

"1. the sum of 25,000 francs in money; 2. a gold wristwatch; 3. two gold teeth; 4. a dresser; 5. a goat for the banquet of the diegues 2/ and 5,000 francs for the 'bidiaws' (white hair) of the old man 3/ and I have forgotten the bed which cost 18,000 francs and a basket of cola-nuts. Then he went off to Dakar the next morning with the girl and three of her friends to get the clothes which were to make up the rest of the first gift."

It is this very personal impact on government officials and politicians that gave the communications from the peasants their cutting edge. No wonder there was resentment and resistance. But the peasants hammered on and, if they suspected that some of their complaints might not be aired, they wrote directly to the President who gave firm instruction to maintain the freedom of expression. He recognized it as a valuable ally in efforts to combat corruption and improve the effectiveness of government.

3. RADIO AS DIALOGUE

3.1 Programming

The success of reception is a tribute to the quality and style of production. Senegal radio has broadcast many educational programs in the past, on agriculture and health, on civics and international affairs, but never did they reach a mass audience comparable to that of the RER. For the most part they were studio productions in which experts explained a subject and gave advice to their listeners, attracting only highly motivated listeners.

The RER, on the other hand, is a constant gamble on the vitality of objective and realistic reporting. At least 70% of its programs are recorded outside the radio, and this is the key to its success. It is the voice of the peasant talking freely into the microphone in the shade of his village tree, who speaks from the heart in his inimitable style and with personal conviction -- this has caught the ear of Senegal. And the minister, the specialist, the official of technical services who addressed himself to the peasants from his office reaches an audience with whom he has never been able to communicate so directly in the past.

Such field-based programming takes far more time and money than studio productions, as will be seen clearly from the economic analysis of the rural radio. It requires transport, gasoline, and portable tape recorders, and calls for the kind of educational journalist who can drop in on a village unexpectedly and put everyone at ease so that peasants will speak to him (and into his microphone) as if he were a neighbor. This demands special psychological skill, thorough familiarity with rural conditions, and courage -- as well as honesty on the part of the reporter.

If you ask Boubacar Sock, who heads the RER and regularly reports from the villages, what he considers to be the esssential quality of an educational broadcaster, he would say that he should be "engaged", thoroughly committed to the cause of the people. His role is not that of missionary or politician, of expert or teacher. He is above all a mediator who seeks to get at the real problems and tries to resolve them by stimulating a fruitful dialogue between the base and the authorities, and among all the people of the country. This demands both forthright determination and caution. Though the RER is not muckraking for the sake of sensationalism or turbulence, in its restraint as a mediator it has still a good deal of the bite of provocative journalism.

It is through its journalistic approach, through the practice of handing the microphone to the people, through its realistic reporting that the RER has achieved success. But in a People's Radio, field-based production need not be limited to journalistic reporting. As the television experiment has so well shown, the people of Senegal are very gifted for drama and able to express themselves through plays and entertainment that correspond to their spirit, their culture, and their needs. Popular drama produced in the radio studio has been as successful as the RER and has reached as wide a popular audience. Unfortunately, these dramatic programs in the Wolof language were discontinued some years ago and the lack is badly felt by the people as well as by the broadcast authorities. It is hoped to revive these productions and, taking the lead from the pilot project's television and radio

experiences, they might well seek direct audience participation in the performances and weave them into the total cultural and educational context of broadcasting.

3.2 Reception and Feedback

The base-line survey had established that radio was already widespread in the villages, but the special significance of group reception had yet to be proven in practice.

Listening groups were formed in many villages, either spontaneously or with the assistance of different extension services. Some group listening takes place in public rooms or private homes, but most of the time the peasants sit under the village tree or on the sand.

Group listening and discussion meets quite a number of difficulties. The supply and maintenance of radio sets and dry batteries seems far less of a problem in Senegal than in some other developing countries. On the other hand, discussion starts up only slowly and frequently it is the same people who speak up. Much of the discussion is continued, after the formal session, in homes and among small groups in the village, and also in neighboring villages which have no listening groups.

The reflection of these discussions in letters to the radio is another matter. The vast majority of peasants are illiterate. But in many villages one or two people have been found who can write. The secretary of the listening group, or a youngster who has learned in school to write French, expresses the principal points the group wishes to make. Since these people live in an oral tradition and have generally an excellent memory, recalling a discussion without note-taking poses no problem.

Letters come to the radio not only in French but also in Wolof, written in Arabic characters. Wolof has only now been transliterated into Latin script, but peasants have for a long time learned Arabic script in the Koranic schools. The use of these letters by the radio poses special problems. The radio team cannot read Arabic script, and those who can read it cannot translate into French. An old Wolof farmer and poet has therefore been incorporated into the team of the RER to read these letters on the air or into a tape recorder so that someone else can translate them from spoken Wolof into written French.

This return of the letters to the villagers who hear what has been written in their name is not only an inducement to listen attentively to every program but also a way to check on whether the

letter has correctly expressed the views of the listening group. It has been general experience that the letters accurately reflect discussions. But many villages where spontaneous group or individual listening takes place never write to the station, frequently because there is no one available to send off a written communication.

Why do people come together to listen in a group when most of them have a radio set at home? I once put this question to a village in the region of Djourbel where there are 30-40 private sets. The answer came back promptly: "When I listen at home I only listen with half attention. When I listen in the group I not only follow the program better, but we can discuss it and if necessary also take decisions here. I could never do this at home."

The importance of group formation and group discussion was analyzed by Farah N'Diaye in his report on the composition and functioning of listening groups, published in April, 1969 (N'Diaye, 1969a). In this report, he comes to the following conclusions:

A. The listening group appears to be broadly representative of the village concerned.

B. The listening group is an important and unique link in the chain of intermediary institutions used by the system of cadres. The influence of the listening group covers the village and goes beyond, to the level of the district, the region, and even of the country.

C. Although the listening group is a new institution, it does not, nevertheless, appear as an alien institution in the village. Although it is a new institution, dating from the start of the Radio Educative Rurale, the listening group has quickly found a place beside the traditonal village institutions.

D. Group listening would appear to be a form of educational action perfectly adapted to the psycho-sociological milieu in which the Radio Educative Rurale operates: the collection and dissemination of information, the acquisition and transmission of knowledge in the framework of groups of various sizes (family, age group, village council, village square meeting, etc.).

E. The listening group is a pioneer institution in the advance towards participation and modernization.

The original 57 listening groups were formed with the help of of the "Animation Rurale", whose staff were gathered in a series of 3-day training courses organized in the regions to teach them how to

convene a group and conduct a discussion. Since that time, the movement has spread far beyond its original base, though most of the early radio clubs still continued to function in 1972. Some new groups were formed with the help of extension services (centres d'expansion rurale) or other technical agents, since the "Animation Rurale" has largely disappeared from rural Senegal. Other groups were stimulated by the programs themselves and created spontaneously. But recently there has been a lack of systematic effort to promote group listening; the team of the RER is too busy just producing programs, largely on the basis of recordings gathered in the villages and among officials. It would seem to an outside observer that group listening has not kept pace with the spread of individual listening, and this is liable to reduce the effectiveness of the RER in the villages. There remain, however, a sufficient number of villages with listening groups who write back to the radio or speak into the microphone for the voice of the peasants to be heard continuously on Senegal radio. In fact, No. 18 of DISSOO published letters from 91 villages written in July-August 1971 alone. Since 1969 more than 2,300 letters have been sent to the RER from 500 villages.

Group listening is of key pedagogical importance. But it would be to underestimate the impact of the RER were one to ignore the very much wider individual audience. Indeed, from informal impressions, there are few people today, either in the rural areas where Wolof is spoken or in the cities, who do not follow the educational programs. I have talked to people at random in villages, in the streets of Dakar or on its beaches, and even to young schoolchildren -- invariably they knew the programs and most followed them with keen interest.

Within a few years the "Radio Educative Rurale" seems to have penetrated the entire fabric of Wolof-speaking Senegal, a rare success for any educational program, whether nationally-sponsored or assisted from abroad.

3.3 Results

As soon as the broadcasters went out to the villages to record the views of the peasants and letters started to come in from the radio clubs, the voice of the people was aired throughout the Wolof-speaking regions of the country. Government officials were startled by what they heard and had a hard time answering the complaints.

It was like opening the flood gates. More than 300 letters came in during January and February, 1969, letters of misery and complaints, of rage against being cheated, and of enquiry about the rights of the peasants. By no means disloyal to the government, the peasants felt betrayed by its servants.

"The farmer subsists on his produces alone; he must work for eight months, incurring debt in order to be able to feed his family, pay for the seed received from ONCAD and repay his debts to the cooperative. The small income which remains must be in his hands in good time and in a lump if he is to straighten himself out. But you suggest that he should get it in penny numbers: dear friends, that is not the way to make the economy of Senegal work."

So wrote the peasants of N'Drame' Ibra in the name of a listening group of 26 persons on 15 and 17, January 1969.

Protests were directed not only against officials but against fellow-villagers who made debts far beyond their ability to repay, while the entire village was held responsible for them. A collusion was denounced between suppliers of fertilizers, seed, and agricultural material and those villagers who lived beyond their means at the expense of others.

Many peasants made every effort to meet their obligations. The new radio club at N'Goundiane Peve reported that "after lengthy reflection we have called this group 'the opponents of under-development'", and reported 80-100% repayment of debts. "This is in the interest of all members of the cooperative, and we do our best to oblige or even to force everybody to pay his debt immediately when it is necessary to do so. We, the members, serve as guardians against those who wish to sabotage our cooperative." Exasperation was particularly great because debts were frequently contracted for supplies which were deficient or ill-adapted. Dust was mixed in with the seed, supplies were of poor quality.

The same complaints came in about equipment, which was frequently found to be faulty or ill-adapted to their needs, and sold with undue profit.

Government officials, especially the ONCAD in charge of cooperatives, tried as best they could to answer these complaints. They informed the villages that the cooperative did not belong to the president but to its members who had rights of which they were generally unaware. They sought to explain government policies and the impact of falling prices on the world market. Many of the complaints were, however, too well founded to be explained away; the peasants checked carefully whether their letters were read fully and answered properly.

"This programme is heard by the members of the group. But you said 'dissoo' and yet we very rarely hear replies to the letters which are written and we do not know why. You must know that it is the replies which encourage us; we listen every Sunday and we hear nothing." (19 February, 1969 - 20 persons)

Tempers rose on both sides of the radio fence, and there were many officials who wished the rural radio had never gone on the air. The director-general of ONCAD recalled in 1972 that the broadcasts were initially believed to be directed against the ONCAD. Many of its agents resented that the peasants could bring their complaints directly to the ear of the highest authorities, thus by-passing normal hierarchical channels ("qu'on depasse le cadre de la hierarchie normale"). But later it was found, after closer collaboration with the producers, that the criteria and reports of the programs were perfectly objective.

Such recognition came with time, but not until after many attempts had been made to censor or stifle free expression. Once more the matter had to be brought to the attention of the President of the Republic. A full dossier of letters and official answers given on the air was handed to the President, and his attention was drawn to the explosive issues which the program would have to raise if they were to keep their faith with the audience. President Senghor left no doubt about his position:

"My only choice is between dictatorship and dialogue, and I have chosen dialogue. We must even engage in dissent."

3.4 Radio Educates the Government

After three years of operation the importance of such free communication with the peasants is clearly recognized by the authorities. No one is more convinced than the Minister of Rural Development, Mr. Habib Thiam, who has ridden out the storm of peasant discontent thanks to a constant dialogue with the people.

Mr. Habib Thiam recalled how, during the height of the difficulties, he toured the whole of Senegal and met with all village chiefs, presidents of cooperatives and all the weighing officers -- some 20,000 - 25,000 people in all. Every time the radio was at his side. "There was a general meeting, broadcast live. I asked them to tell us what was going wrong and we told them what we could do. The peasants in other regions followed on the radio what was discussed elsewhere, and when I moved on I arrived to find an audience already prepared. For Senegal, this was a revolution."

Much of the economic success of the last years was attributed by the Minister to the radio. True, the rains had come at last, "but it makes no difference whether it rains or not if the people are not psychologically prepared."

The Minister stressed that he had benefited as much from this dialogue as the peasants.

The Minister's words are echoed by the technical sevices. The Director-General of ONCAD pointed out that formerly all information from the villages was "filtered" before it came to the top and arrived with much delay.

The Director of the Water and Forest Services called the radio a "fundamental tool" that had concrete results and led to new awareness among the people. He cited as an example the campaign against brush fires, which are caused by negligence and carelessness on the part of nomads and farmers, hunters and travellers.

He pointed out that previous campaigns against brush fires undertaken by extension agents and party officials had not made a real dent among the peasants, for the agents rarely listened to the peasants' side of the story and the technical explanations and counsel were frequently awkward or tactless.

More often than not the agents appreciated the help they were receiving from the radio. With the lack of sufficient extension services in Senegal, as in all developing countries, such support is essential for the large-scale and speedy dissemination of information and education.

Seen from the point of view of the local agent, the radio had a further significance in vertical communication. On the one hand, it was an important source of information. On the other hand, the radio also makes it possible to channel information more effectively and speedily to the top.

3.5 The Government Responds

More important than the spontaneous expression of satisfaction by those directly responsible for rural development has been the impact of the radio on government policy. Alerted to the real conditions of misery and dissatisfaction that led peasants to return to subsistence farming, thus practically to go on strike, the government took a series of far-reaching measures:

On May 31, 1970, it was decided to pay an exceptional bonus on all groundnuts delivered; the amount varied according to the extent of the damage caused them by the drought and the effort the peasants had made to pay back their debts. The total amount distributed reached approximately 1,315,000,000 francs. 4/

During the month of June, various sessions of the inter-ministerial council examined all aspects of the critical situation in the groundnut area, and the Minister of Rural Development set out to meet villagers and organizations throughout the country. Soon thereafter it was decided to begin important reforms of the cooperative

systems and the ONCAD to meet problems that had been brought to the attention of the government.

But the most important step taken by the government, long demanded by the peasants, was the annulment of debts that had been contracted for seeds, agricultural equipment, and supplies. Since the peasants not only found it impossible to meet these obligations but contested whether they had been contracted under fair conditions, the state decided to cancel debts amounting to a total of 2,616,000,000 francs. Finally, responding once more to a frequently voiced concern, the price to the producer for groundnuts was officially announced well before the 1971-1972 season; it amounted to 23.10 francs per kilogram, and was standardized throughout the country to the benefit of the marginal regions that had hitherto been disadvantaged.

These measures were explained each time by the ministers and other high officials directly to the peasants through the RER. There was no doubt in the mind of the peasants that their voice had been heard, and they were deeply grateful.

Peasant reaction to the radio was enthusiastic from the start:

"The radio which you have given us is a key. If you cannot open the door you do not know what is inside the house. The world was closed, but now it is open, we know everything." (February, 1969)

After the government had responded to the peasants, their attachment to the radio is, if anything, even stronger as is apparent from letters such as these, written at the end of 1971.

"RER has enabled us to hear everything, both near and far".

"We thank the whole of the team of the RER. Thanks to your dynamism, to your devotion to the cause of the peasants, we, the people of the country, are kept aware, through your programmes, of all the many problems and of the solutions to them."

3.6 Political Implications

When the people address themselves directly to the President of the Republic, they imply that their welfare is not merely of concern to the technical services that deal with rural affairs but is eminently a public issue. As an agent of adult education in its broadest and most dynamic sense, the "Radio Educative Rurale" has become a major force in Senegal's civic affairs.

No one is more conscious of this than the peasants themselves. As one listening group put it succinctly:

"As far as we are concerned, we would say that the educational radio broadcasts take the place of our deputy, because they do what he should be doing for us."

Similarly, the peasants appreciate that the RER enables them to bring pressure on the administrative hierarchy so that it may better serve their needs.

In Senegal, as in most countries of the world, the established political and administrative structures cannot respond fully enough and with adequate speed to the demands of changing and revolutionary conditions.

Government response to popular needs and pressures has become particularly difficult in the contemporary world, not only because of social and political conflicts, but also because of the ever-increasing pace of change. The impact of accelerated technology, the growing inter-dependence of nations all around the globe, and the determined affirmation of the rights of people everywhere have created a situation where constant communication between government and the people, as well as among the people themselves, has become both dramatically urgent and extremely difficult.

Here, of course, the mass media that can provide free two-way communication come into play, but there is great risk in opening the floodgates of free communication to the people. Nevertheless, the turbulent history of the past decades, especially in the developing world struggling to overcome its internal problems and to free itself from colonialism and neo-colonialism, may perhaps indicate that the risk of not permitting free communication through the media is an even greater one.

Since the RER is more than a vocational service for the teaching and spread of agricultural techniques, its establishment and operation were the result of political decisions. No mere "professional" approach to the educational use of the media will ever be able to draw on their full potential, although professional competence in production and community use is an essential prerequisite.

The RER is deliberately non-partisan and focuses attention on sepcific issues of concern to the rural population and the authorities, be it the use of fertilizers, the problems of cooperatives, or the danger of brush fires. Through its very concentration on practical problems, the RER impels all parties to the political process to go beyond pre-conceived positions and come to grips with realities to the best of their ability.

The assets of the RER are, therefore, as important to the government as to the people. In Senegal, the basic significance of the RER has been to promote this road of participation in development and lasting change of conditions.

4. COSTS

One of the objectives of the Pilot Project was to throw light on the economics of using audio-visual media for adult education. However, the television component of the project proved so complex that no valid economic conclusions can be drawn. Since the infrastructure itself had to be established, and a large part of the available time and resources devoted to the installation and maintenance of a relatively small television station, the economics of the operation do not permit extrapolation to a larger scale. The number of teleclubs and programs was too limited to permit an assessment of general significance, although the problems encountered owing to limited funds and resources had their own lessons to teach, as was pointed out earlier.

The scale and nation-wide impact of the Radio Educative Rurale, on the other hand, make it possible to draw pertinent economic conclusions. It clearly demonstrates the low cost and considerable economic benefits of using radio broadcasting for adult education in the rural areas of a developing country.

The economic evaluation of an adult education enterprise differs from that of school education. In formal education, it is generally not possible to go beyond an assessment of costs, since benefits are too long-range and indeterminate. The use of media in formal education is therefore usually compared to that of corresponding education through conventional methods.

In adult education comparative costing is more difficult while benefits are more clearly visible. Cost comparisons are difficult because adult education lacks the broad institutional base of formal instruction; the various methods and agencies of adult education are generally complementary rather than providing alternative approaches. On the other hand, since adult education addresses itself to the productive portion of the population, especially when it seeks to promote economic activities as was the case with the RER, inquiry into its economic benefits is a valid criterion. Not that its significance can be measured only by short-range results; the long-range and more tenuous effects are important although they are hard to quantify. Nor can the economic input into adult education be limited to consideration of public expenditures, although the latter are, of course, of particular interest to policy-makers. One of the specific economies of adult

education is the very considerable effort usually made by the citizens themselves. This is particularly true of the use of radio, since private reception is an essential part of it. To estimate this input is difficult because the use of a privately purchased receiver is not restricted to the reception of a limited number of educational programs.

These are some of the considerations which have guided the economic analysis of the RER undertaken by Mr. M. K. Trabelsi on behalf of the International Institute for Educational Planning (1972). Mr. Trabelsi's report, which breaks new ground in an effort to assess the difficult domain of adult education based on a broadcast medium, will be published in extenso by the IIEP. The following pages are taken from this study in advance of its official release by the Institute.

How much will RER have cost?

In the total absence of overall accounts or budgetary documentation dealing specifically with educational radio, it has only been possible to estimate costs by reference to a method of inquiry combining information provided by the organizers of the RER and the systematic analysis of all available documentation such as program notes, accounts of meetings, reports concerning the analysis of correspondence, etc.

4.1 Methodology

Staff Costs

In order to estimate this category of costs, it was first necessary to reconstitute a list of all who participated in the activities of the RER. This list reveals four categories of staff:

a. permanent staff working full-time for the RER;

b. half-time staff working for three days each week for the RER, and representing the Animation Rurale, ONCAD, and SODEVA;

c. occasional staff participating in some specialized programs and working for the RER an average of one half-day per month and per person;

d. members of the inter-ministerial commissions and working groups set up by these commissions. This staff comprises representatives from the different ministries involved in the RER program, namely the Ministries of Information, Rural Development, Education, Public Health, and Social Affairs, as well as SODEVA and ONCAD.

The representatives of the ministries are not always the same, the selection depending on the subjects dealt with in the programs.

It may generally be considered that the time devoted to these meetings does not exceed one day per person and per meeting.

For categories other than permanent staff, the method of evaluating the cost of their participation was as follows:

a. as complete a list as possible of the participants was drawn up;

b. salaries, including expenses, paid annually, were listed;

c. the cost of one man/day was calculated on the basis of the assumption that each participant worked, on average 240 days per year. This works out at 4,185 francs CFA per man/day on average, for the years 1969-1970 and 1971. (Two hundred fifty francs CFA equal $1.).

On the basis of this unit cost and of the working days worked out from reports of meetings, it is possible to evaluate the cost of the participation of non-permanent staff.

Travel expenses

A study prepared by a consultant group for ONCAD, which financed a major part of the transport costs of the RER, has established the total cost per kilometre at 25 francs CFA, on average, for cars, and 40 francs CFA, on average, for cross-country vehicles.

We may assume, again on average, that reporters are sent as often to outlying regions as to villages on the edge of main, metalled roads. Consequently, we may estimate that, on average, half the journeys are made in cross-country vehicles, so that the average cost per kilometre may be reckoned at 32.50 francs CFA.

To the costs of transportation must obviously be added the costs of travel expenses and accommodaton.

As a general rule, travel expenses depend on the position occupied by the official in the administrative hierarchy. Travel expenses range between 800 and 1,600 francs CFA per day according to grade. The average cost of a hotel room is 1,200 francs CFA, and of a meal, approximately 800 francs CFA.

As we have seen in the outline of methods, cadres working in the field participate in the production of programs. For purposes of

evaluation, we should first note that their salaries are generally substantially lower than those of most other participants in the RER.

For an average of 40 trips per year we may estimate the cost of participation by this category of staff at 50,000 francs CFA per year.

The estimate of 40 trips a year is based on the fact that between the months of July and November, that is to say during the rainy season, the Friday program is not broadcast. Reporters then travel less frequently, and are able to record, during a single journey, the material for two or even more programs.

Let us now turn from the evaluation of staff and travel costs to the cost of equipment.

The production and receiving equipment was not much used during the preparatory period. Amortization will only therefore be calculated from January 1, 1969 onwards.

This equipment includes portable tape recorders and editing decks and the 270 receiving sets distributed to the villages during the setting-up of the listening groups in 1968 and 1970. All this equipment was provided free to Senegal through the United Nations Development Program.

The estimates of the costs of utilization of this equipment are based on the assumption that if the material is provided through multi-lateral aid in order to help the broadcasts to get off the ground, the replacement of this material if the experiment is prolonged may be at Senegal's own expense. The value of the material is thus considered as a hypothetical loan which will be paid off by Senegal in successive annual installments so that, at the end of its period of utilizaton, it may be replaced by new equipment at prices effective at that date.

The initial equipment was delivered in 1968. In 1970 and 1972, new equipment was required to cope with the expansion of the activities of RER. As these purchases involved equipment of the same type as that delivered in 1968, it has been possible to obtain from the bills a very clear idea of the movement of the prices.

These prices increased considerably as far as good-quality portable tape-recorders are concerned. In calculating amortization, the rate of interest for the replacement of equipment should be taken as 42.5%.

Portable tape-recorders, constantly carried around under difficult conditions, last four years. The editing machines, which

remain in the studio, may last five years. The receiving sets and the small cassette players last three years.

Prices for this latter category of equipment have moved very slowly, and it would appear that a rate of interest of 3% would be sufficient for their replacement.

In 1970, a small editing deck of current type and medium quality was also acquired. A rate of interest of 12.9% would appear sufficient to allow for its replacement after four years of use.

This disposes of the question of amortization of equipment. In order to calculate the total cost of its utilization, we should add to the amortization of the tape recorders, the use of two tapes per program, at an average cost of 677 francs CFA per tape; and to the use of receiving sets we should add the cost of replacing batteries every three months, which entails an average expenditure of 768 francs CFA per year and per set. Once these amounts have been calculated we must add finally the cost of maintenance which, according to estimates by the technical services of Radio Senegal, amount to 5% of the purchase value of the equipment.

The final element of the cost of the RER service comprises general overheads, including costs of maintenance of buildings, water and electricity, insurance, office supplies, postal charges, telephones, telex, and various administrative costs.

For the national radio service as a whole, these costs amounted to 34,000,000 francs CFA, on average, between 1969 and 1971, for 240 office employees.

Our global estimate of these costs was 600,000 francs CFA during the preparatory period and 1,000,000 francs CFA per year during subsequent years.

We now have most of the elements necessary to assess the costs of the rural educational radio service with sufficient accuracy. Our list would be incomplete, however, if we do not take account of the cost of correspondence addressed to the RER, as well as the costs of various training activities.

In order to evaluate the costs borne by persons writing to the radio, we have estimated the average cost of a letter at 40 francs CFA, including paper, envelope, and stamp. We have then supposed that an equal quantity of letters reached the RER every year, the actual number of letters being 2,316.

Moreover, and in addition to the training courses for the monitors of listening groups, a fellowship amounting to a total of 250,000 francs CFA was accorded by Unesco to the present head of the RER service to study, during two months, a similar experiment conducted in Togo.

In 1971, further training courses were organized for field cadres who, in turn, will be responsible for training the leaders of new listening groups. The cost of this operation was evaluated on the basis, on the one hand, of travel on the part of the radio staff who gave these courses and, on the other hand, of the time they spend in the field.

The various costs, thus calculated, are classified under two major headings: production and reception of programs.

Production costs are divided among: staff (including training for production); travel; overheads; utilization of production material (including consumption of recording tapes).

Reception costs refer to training costs, the cost of correspondence and the use of reception material (regular annual amortization payment, consumption of batteries, and maintenance), with regard to the 270 sets distributed in the villages between 1968 and 1970. In other words, our study only concerns, as far as reception is concerned, public expenditure. Expenditure by the RER and by individuals listening to the programs privately have not been taken into account. Such a method may appear debatable, but first there is no means of knowing how many radio sets are used in the 8,000 villages of the groundnut region, and, second, even if a sufficiently accurate figure could be obtained, it would not be enough to give a precise idea of the cost of receiving the RER programs. We should point out that the sets are not used for receiving these programs alone, and that in order to calculate the precise cost of receiving the DISSOO programs it would be necessary not only to know the duration of all broadcasts and the duration of the RER program, but also to know the average audiences of RER programs and of all other broadcasts. It may easily be imagined that the cost of obtaining such information would be prohibitive.

Having evaluated the costs of production and reception, we must now evaluate the costs of broadcasting. For this purpose we have analysed Radio Senegal's budget. For all the transmitting stations in Senegal, this budget provided for the following sums, between July 1, 1969 and June 30, 1971:

Amortization	31,933,588 francs CFA
Technical maintenance costs	136,000,000 francs CFA
Technical staff	96,706,000 francs CFA
TOTAL	264,639,588 francs CFA

From July 1, 1969 to June 30, 1971, total transmission hours from Radio Senegal were:

1969	11,163
1970	22,308
1971	11,630
	45,101 hours

From this information we can calculate the average cost per hour of broadcasting at 5,868 francs CFA for the period under consideration. We shall use this figure for evaluating the cost of broadcasting the RER programs during the first six months of 1969 and the last six months of 1971.

After the first program on December 15, 1968, the duration and, consequently, the costs of broadcasting are described in Table 1. Multiplying the average cost per hour of broadcasting by the duration of RER broadcasting for each year, we obtain the costs set out there.

It should be noted that this method of calculation is only valid because RER used existing installations, which incidentally it helped to exploit more fully.

4.2 Cost-Analysis

Table 2 shows that far and away the greatest costs are those for production (between 91 and 95% of the total, except for the preparatory period when they accounted for almost the whole expenditure).

Within the production costs total, the most important item is that covering permanent and non-permanent staff as shown in Table 3.

TABLE 1

BROADCASTING COSTS

	1968	1969	1970	1971
Duration	1 h. 30 mn.	44 h. 30 mn.	46 h.	43 h. 45 mn.
Cost in francs CFA	8,800	261,000	270,000	256,700

TABLE 2

TOTAL COSTS OF RER IN THOUSANDS OF CFA FRANCS

	1968	1969	1970	1971
Production of programs	12,329.9	17,428.9	16,339.9	13,427.5
Transmission	8.8	261.0	270.0	256.7
Reception	146.0	668.0	668.0	1,218.0
Total	12,484.7	18,357.9	17,277.9	14,902.2

TABLE 3

PROGRAM PRODUCTION COSTS IN THOUSANDS OF FRANCS CFA

	1968	1969	1970	1971
Permanent staff a/	9,217.5	12,411.3	11,690.7	8,683.4
Non-permanent staff	1,089.6	2,372.7	2,364.3	2,276.4
Transport and travel	837.7	800.0	800.0	800.0
Utilization of equipment	8.1	479.5	484.9	667.7
Training	250.0	-	-	-
Overheads	600.0	1,000.0	1,000.0	1,000.0
Evaluation	327.0	365.4	-	-
	12,329.9	17,428.9	16,339.9	13,427.5

a/ Including international and French technical assistance.

Equipment and travel expenditure account for a relatively small part of the cost of production (7 to 10%). The importance of software in this type of experiment is thus clearly demonstrated.

Analysis of the broadcasting schedules shows that ONCAD and SODEVA are the principal sponsors of the Wednesday and Friday programs as shown in Table 4.

If we assume that the costs of production and reception of a joint program are not significantly different from those of a Wednesday or Friday program, it then becomes possible to calculate average unit costs for programs heard by 270 listening groups (with the reservations already expressed with regard to the calculation of the cost of reception).

In 1969, the average cost of a round-up program (programme de synthese) was 143,200 francs CFA, while for a reporter's broadcast it amounted to 141,700 francs CFA. In 1970, these costs amounted respectively to 131,000 and 129,300 francs CFA, and in 1971 they reached respectively 115,700 and 114,300 francs CFA.

In order to make the meaning of these figures clearer, we shall compare them with those for activities carried out in the field by SODEVA and ONCAD. It should not, indeed, be forgotten that the majority of these programs form an integral part of wider activities, for which they are vehicles. As far as SODEVA is concerned, we shall compare, for 1971, the total expenditure on agricultural extension work with the cost of the programs broadcast on this subject.

For ONCAD we shall merely compare the cost of one single education operation with that of the seven broadcasts which lead up to and accompany it.

Between July 1, 1970 and June 30, 1971, SODEVA spent 350,000,000 francs CFA on agricultural extension work conducted by 440 field workers.

TABLE 4

BREAKDOWN ON THE RER PROGRAMS BY PARTICIPATING ORGANIZATION

	1969	1970	1971
Wednesday and Friday programs			
ONCAD	36	21	45
SODEVA	16	26	16
Others	28	35	20
Total	80	82	81
Round-up programs	49	51	47

During the same period, 21 programs were broadcast to back up these activities (9 in 1970 and 12 in 1971). The cost of these broadcasts was high amounting, according to the earlier calculations, to 2,535,300 francs CFA, i.e., 0.7% of the total for the extension program. It should be recognized, however, that this comparison does not mean much, since that not all the extension activities are covered by the broadcasts.

It would of course have been interesting to evaluate the effectiveness of radio in this type of educational activity. For this it would have been necessary to identify a certain number of parameters, for which values would have been established before the broadcasts started. As this work was not done beforehand, it is impossible, after the RER has been in operation for three years, to evaluate objectively the advantages accruing from the use of radio. We are unfortunately obliged to limit ourselves to evaluating as nearly as possible the cost of broadcasts accompanying activities carried out in the field. As far as ONCAD is concerned, we have very precise data concerning the co-operative administration topic. Every November, ONCAD helps co-operative members organize annual general assemblies to elect new administrative boards and management boards of the co-operatives. The cost of this activity in 1972 was 9,943,500 francs CFA. Seven programs on this topic were broadcast during the months of October and November. The cost amounted to 800,100 francs CFA, i.e., 8% of the cost of the field operations. In the opinion of those responsible, as well as those of cooperative members themselves, these programs are an extremely effective way of informing the peasants and providing solutions to the problems which arise in this connection, although it is difficult to give further details.

The percentages which we have just calculated make it possible nevertheless to glimpse the possibility of making more intensive use of rural radio, which could touch upon more activities and more aspects of Senegalese rural life.

Before studying plans for the expansion of the RER, a final point concerning cost analysis remains to be considered, the fact that the costs of the educational radio were not entirely borne by Senegal. Unesco, UNDP, France, and Switzerland also contributed to the financing of the experiment. Table 5 indicates the contribution made by each.

In all, since 1968, 55.4% of the financing of the RER has been provided by Senegal, 40.6% by multilateral assistance and 4% by bilateral assistance.

It may be noted, however, on average there has been a clear trend for Senegal's share of the financing of the RER to increase. This increase is due, on the one hand, to the disappearance of bilateral aid,

TABLE 5

ANALYSIS OF THE COSTS OF THE RER BY SOURCE OF FINANCING
(IN THOUSANDS OF FRANCS CFA)

	1968	1969	1970	1971
Senegal	2,644.9	11,843.4	9,960.8	10,397.5
Unesco-UNDP	7,484.8	6,344.5	7,227.1	4,304.7
France a/	1,005.0	180.0	90.0	-
Switzerland b/	1,350.0	-	-	-
Total	12,484.7	18,367.9	17,277.9	14,702.2

a/ Three-and-a-half months by a civilian technical assistance expert and twenty-five months by a participant in the military co-operation scheme.

b/ 180 receiving sets offered by Radio Suisse Romande.

and on the other hand, to the closer and closer integration of the RER into national activities.

4.3 Conclusions

What conclusions may be drawn from this analysis by Mr. Trabelsi?

1. The cost of radio broadcasting as an instrument of rural extension is very low, especially since it is able to "visit the same village all year round several times a week".

One way to assess the economy of broadcasting is to compare it to the cost of other forms of adult education, even though their effects are not really comparable. Demonstrations of farming techniques and personal advice by extension agents is very different from instruction given over the radio in response to questions sent in by the audience, and from the motivational, participatory impact of broadcasting. Nevertheless, a comparison is not too far-fetched. Trabelsi shows that the cost of programs directly linked to the "vulgarization agricole" undertaken by the SODEVA amounts to only 0.7% of its total expenditures for this purpose. He also calculates that the important support given by the radio to improve the administration of the co-operatives required 8% of the expenditures made for this purpose by the ONCAD.

The total budget of the broadcasting organization is 335,000,000 francs CFA (July 1, 1970 - June 30, 1971), but expenditures on the RER amounted in 1971 to only 14,702,200 francs CFA, of which 10,397,500 were spent by Senegal, while 4,304,700 derive from United Nations funds. Total expenditures for the RER (both Senegalese and United Nations) correspond to the market revenue of 230 tons of groundnuts, a sum which is more than modest compared with the results which are obtained.

2. In public expenditures for broadcasting the cost of producing programs is far and above the greatest element, that of the hardware required for production and dissemination amounts to only 7 - 10% of the total. One must add, of course, to hardware the cost of privately purchased home receivers; but the fact that broadcasting stimulates private investment and participation should be considered an economic asset rather than a liability.

It is evident that efficient utilization of investment in broadcasting facilities requires that adequate funds and personnel be made available for the production of educational programs. This is only possible if broadcasting in general, and its educational applications in particular, are given the necessary priority in public expenditure. As is apparent from the first conclusion, greater investment in programming and audience relations is not likely to involve considerable additional expenditures.

3. Adult education through broadcasting is matched by immediate and long-range benefits in increased production, growing peasant initiative, and participation in public affairs. If radio becomes an integral part of development action, it proves to be a highly economic component.

It would, of course, be inaccurate to attribute the renewed success of Senegalese agriculture only to the impact of the RER. The return of the rains and the government support (given largely in response to feedback from the villages) are of capital importance; but so is the direct and indirect influence of the RER. In any case, it is worth noting that the 1972 groundnut harvest was highly favorable 5/ and debts were paid back at an unprecedented rate of 90 - 100%.

The absence of economic data and the difficulties of evaluating the comparative cost of adult education broadcasting has frequently led authorities to conclude that the employment of mass media in adult education is uneconomical and prohibitive. The results of the study of the RER reveal, however, that radio broadcasting, far from being prohibitive, is in fact a very economical way to reach and educate the peasantry and to promote national development in general.

It may be hoped that recognition of these facts by governments, broadcasting organizations, and aid-granting institutions may bring them to the realization that media of communication, far from being merely luxury enterprises and social overheads, are in fact an economical tool of development. Failure to make good use of existing investment in communication infrastructure in fact contributes to a wastage of national resources.

5. CONCLUSION

The difficulties, shortcomings, and failures of experimental projects are as significant as their successes. It is in this open-minded spirit that we have traced the history of the experience in Senegal and sought to evaluate its impact. Throughout the foregoing pages, attention has been drawn to significant lessons. It may, however, be useful to summarize once more certain principal conclusions.

The application of radio and television to adult education does not grow organically out of existing structures and practices. Neither the media, when in fact they do exist, nor the institutions and organizations concerned with adult education are necessarily predisposed to a joint comprehensive effort. The condition of success is the solution of political, administrative, and financial problems; the more rational use of existing facilities and staff; the provision of new resources in funds, hardware, and personnel; and the elaboration of the methodology adapted to the needs and aims of adult education. A great

deal of time, money, and personal effort had to be spent on this preparatory phase, and it was only thanks to political support by the Head of State, to collaboration between the media and the interested agencies, and also the active participation of the target audience itself, that valid results could be obtained.

The second set of conclusions concerns the material resources, finances, and time required for such an undertaking. Unfortunately, it was not possible to obtain a clearcut economic evaluation of the entire project, in particular of its television component, but certain lessons are clear: a project of this kind should be neither underfinanced nor endowed with excessive resources.

Very much larger facilities and staff might have involved excessive recurrent expenditures and considerable import of equipment and programs, and also might have led to a style of programming unsuited to African needs and conditions. Radio and television must stay within the economic limitations of the country if they are truly to serve its social needs and express its culture and aspirations.

Broadcast media are economical if full use is made of their relatively low cost of distribution, i.e., if they reach a large enough audience. The content must therefore have a large common denominator and reception facilities must be widely available.

Broadcasting is less a capital-intensive industry than is generally assumed. Once the basic infrastructure is assured (and frequently it does already exist), its economic effectiveness depends on the use that is made of it. Since existing broadcasting resources are frequently poorly employed, a more effective and economical enterprise calls not so much for more capital as for a reorientation of programs, training of staff, additional personnel, and better overall co-ordination.

Radio broadcasting is far easier to handle and likely to yield more rapid economic results than television in a country of limited resources and large rural populations. Radio's full potential is generally underestimated and under-used. Without valid experience in radio, the more complex medium of televison may yield less rather than more socially valuable results. But television is an important educational force, and is likely to prove more economical and effective in urban areas than any other corresponding initiatives.

The third group of conclusions concern programming and the context in which it takes place. The style of production is as important as the contents. Only when the audience experiences personal identification with the programs will it respond to their educational message.

Programs are not an end in themselves; their social significance is greatly enhanced when they are part of the dialogue between specialists and the public. Both communication and education are two-way processes; programming must be matched by organized reception and the availability of economic and social services in the communities.

These few remarks by no means exhaust the rich lessons to be drawn from the Senegalese experience, which has not, of course, reached its culminating point.

Senegal has made an important step forward. Originally launched by Unesco at the request of the government, the project is now entirely Senegal's own responsibility and achievement, although it continues to receive some United Nations assistance. It is this effort, not only in Senegal, but by Senegal, that is rich in lessons for other "developing" countries. But beyond this, it points the way for all societies, whatever their level of industrialization and standard of living, toward the more effective use of the media of mass communication as forces of democratic participation, social change, and cultural expression.

6. POSTSCRIPT, MARCH 1975

The above report was written during the first semester 1972. What happened during the three years that have gone by has, unfortunately, not been subject to further research and evaluation. But information that reaches me in France indicates that the educational use of radio in Senegal over the past six years is one of the most telling experiences anywhere in the application of broadcasting to national development:

1. The project is today entirely nationally supported. The Unesco expert left the country in 1973, and, except for a short-term fellowship for Boubacar Sock, head of the RER, to study the educational use of radio and television in Canada, all outside assistance has ceased. A project initially started under international auspices proved sufficiently viable and economical so that the transfer to national authorities has been complete and lasting.

2. Sock was promoted in 1974 to become director of all educational radio programs, including those addressed to schools, a rare example of how creative educational radio for adult audiences may spill over into formal education.

3. The RER, now simply called <u>Radio Educative</u> to mark its nationwide importance, has spread far beyond the original groundnut

growing basin. The regions of the River Senegal in the North and the sub-tropical Casamance in the South are now reached by new programs, many of which are no longer produced in Dakar nor are limited to Wolof. Agricultural content has been adapted to suit varying conditions and to support the government's efforts to diversify agriculture. Fishermen in towns and villages have also found a voice through the educational radio.

4. Hand in hand with the growing participation of the peasants and fishermen throughout the country through the Radio Educative has gone a reorganization of economic planning and implementation. To give the populations access to the planning process itself, decentralizatin of planning at the sub-national regional level has been given impetus so that peasants should feel less impotent as they face the far-away authorities in Dakar.

In short, the Radio Educative continues to give peasants and fishermen a voice that is heard directly in the seat of government and throughout the land.

One way I keep track of what is happening at the grass roots level is through continuous correspondence with Balla Lo, a young peasant, whom I met by accident in 1972 when he was 19 years old and lived with his mother, younger brothers, and sisters in a village some 50 miles inland from Dakar. I met Balla in the darkness of night when my car came to a halt becaue it had run out of gasoline. Since he speaks excellent French, we soon struck up a conversation, which he later extended into correspondence with me after I returned to France.

Like all educated youngsters in the villages, Balla wanted to leave the countryside and go to the city or even abroad. But his efforts were unsuccessful, fortunately for the country, as I saw it and told him. Today, he is working in a village in central Senegal as one of the base field workers (encadreurs de base) of the Society for Agricultural Development (SODEVA). From there he regularly answers my questions about his life and work.

I sent to Balla my report on the RER which he passed on to his superiors and asked him what they thought of it. I also requested that he tell me how he informs himself about the views of the peasants in the four villages for which he is responsible, and how the peasants may bring their problems and conditions to the attention of the authorities. Here are extracts from a recent letter in which he replies to my enquiries:

Soum, Department of Foundiougne,
Sine Saloum, Senegal
February 16, 1975

"...When I asked my superiors what they thought of the publication they found it perfect, as they said. I would like you to know that the SODEVA itself has ordered us to form listening groups of the educational radio.

"To bring about a dialogue, I first pose the questions, then I analyse the replies, and now I develop my own arguments.

"The opinions in the villages are transmitted by us, the field workers, to the A.T., the A.T. transmit them in turn to the C.O. and the C.O. send them to the delegation, and the delegation transmits them to where it is necessary.

"The only way the peasants can educate the government is through participation in the programmes of the Radio Educative and through DISSOO, in order to:

"1. Exchange opinions

"2. Propose solutions.

"In this way the radio replies to the questions posed by the peasants. The radio currently makes a great effort to stress the diversification of agriculture among the themes it develops. Moreover, the SODEVA has programs which are later developed by the field workers and the peasants in the villages in which we are working."

Frank, frequently critical dialogue through the radio has proven beneficial both to the rural populations and to the government and its administrations. In the interest of Senegal, and of the many countries that may benefit from its example, it would seem important to undertake renewed research and evaluation of the Radio Educative, in order to bring the story up to date and draw significant lessons from both difficulties and successes for the constructive application of radio to democratic participation in national develolpment in any part of the world.

REFERENCE NOTES

1. DISSOO, a Wolof word meaning understanding and dialogue, became the title of the radio programs.

2. diegues: a Wolof word for matrons who belong to the most important families.

3. The young woman is compensated for marrying an old man with white hair.

4. Balance sheet of the 1971-1972 season. Steps were taken to relaunch the major traditional crops, groundnuts and millet. Statement of the Minister for Rural Development to the National Council of the UPS, March 29, 1972.

5. According to information supplied by the ONCAD, deliveries from the three regions of Thies, Diourbel, and Sine Saloum amounted to 630,557 tons only two weeks after the beginning of the harvest, which lasts altogether twenty-five weeks.

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CHAPTER X

OPEN BROADCAST EDUCATIONAL RADIO: THREE PARADIGMS

Jonathan Gunter and James Theroux

According to UNESCO figures, there are at least 75 million radio receivers in the third world, which would average one for every thirty to forty people. Access to the medium has now been extended to the majority of Latin Americans, and to sizeable minorities of all Africans and Asians. The needs of these primarily out-of-school audiences for basic continuing education are vast. For many, radio represents the only regular contact with the world beyond the village or the neighborhood. Yet, less than 5% of the third world's total hours of radio programming were classified by UNESCO as educational.[1]

Clearly, educators have failed to conquer the world's dominant mass medium. This is not due to lack of recognition of the reach of radio. We contend that educators--drawn to radio because of its low cost and mass audience potential--have chosen to use the medium in ways which usually preclude their attaining truly low costs and truly massive audiences.

After explaining this paradox, we will describe three paradigms developed for reaching and teaching true mass audiences. The first stresses professionalized, "top-down" communication, the second participatory, "bottom-up" communication. The third synthesizes elements from both approaches. The first adapted American commercial advertising methods, the second extended the community development methods of the rural Latin American parish priest. The third derived from the commercial "quiz show" tradition. While the scale, philosophy, objectives and results of these experiences differ, the three approaches can all reach mass audiences of adults with educational messages.[2]

THE RADIO EDUCATORS' PARADOX

Many radio educators think not in terms of audiences' needs, but in terms of achieving pre-determined, long-term educational or developmental objectives. Departing from the tradition of classroom and adult education practices, they generally insist upon connecting the radio message to group learning activities within the context of long-term, multi-faceted programs. In fact, supplemental print media and face-to-face learning are considered to be essential by many international authorities, in order for the radio to have any deep or lasting effects upon learner populations.

Multi-media, group learning strategies, when well executed, undoubtedly do provide more profound learning than mass audience, open broadcast. These strategies have also attained sizeable audiences in a few third

world settings. However, we contend that most countries are not in a position to develop truly mass audiences for group learning. Training of group leaders, production of print materials, distribution and coordination problems all divert resources from the one component which a radio project can best control -- quality of the broadcast message!

We also contend that, strategies producing less learning on the part of more listeners might mean a better allocation of resources in many circumstances. Unfortunately, the dominance of group learning strategy in the literature has caused the mass audience, open broadcast alternative to be underemphasized.

In a recent review of 65 development-oriented radio projects only five involved open broadcast to an unorganized, non-captive mass audience. All the rest involved programming directly linked to participation in a long-term of group discussion, study or action.[3]

Of the twenty projects for which audience data were supplied all programmed to organized, group audiences. Only three of the projects claimed anything like mass audiences. These were the Brazilian Movimento de Educação de Base (MEB) of the early 1960's (with 111,006 participants) Colombia's ACPO Radio Sutatenza schools (with 167,451 learners in 1968) and Tanzania's Health Campaign of 1973(with 2,000,000 participants). In these instances, unusually favorable circumstances may explain the attainment of these audiences.

In order to keep these audiences in proper perspective, we should note that the Colombian and Brazilian projects failed to surpass even one percent of their country's population. The Tanzanian audience -- amounting to 15% of that country's population -- may be explained by President Nyerere's stature as a leader, his deep commitment to rural development and his creation of rural party and ministry organizations.

The Colombian and Brazilian projects, though attracting much smaller audiences, benefitted from conditions which are not present in many third-world nations. In the early sixties Brazil's government was committed to grass roots mobilization for rapid social change. In fact when a conservative government took power in 1964 audiences of MEB fell dramatically. In Colombia, ACPO's audience is the result of 25 years of dedication and hard work on the part of a dynamic and well-funded private organization.

The other 17 projects reporting audience data in the above review claimed audiences of less than 15,000. Therefore there is reason to doubt whether group learning strategies can attract mass radio audiences in most of the developing countries which lack the circumstances of the three exemplary group learning projects.

Mass audiences must be courted and won on their own terms. Unlike classrooms, farm forums, or radio schools, mass audiences are not "captive" audiences. Adult educators often fail to realize the

implications of these basic facts. It is not enough to promise desirable long term rewards (learning, vocational skills) to a mass audience and to proceed to teach over radio in traditional ways.

Success with a mass audience means reaching more than those highly motivated enough to join and stay in a farm forum or a radio school. One must assume that the mass audience, although interested in learning and self-improvement, lacks peer reinforcement of group listening and is susceptible to emotional appeals. With other stations on the radio dial offering music, soap operas and light entertainment mass audiences may flick the dial the moment they become bored, tired or unable to follow radio instruction.

Thus, mass audiences differ from organized, group audiences in their desire for entertainment and escape. The surest way to lost a mass audience is to presume to preach or teach. The surest way to attract and hold a mass audience is to offer immediate and continuous emotional gratification -- as well as education.

Commercial and entertainment communicators know how to approach audiences on these terms -- on the audience's own terms -- but, unfortunately, lack any larger educational or developmental purpose. The insipid and sensationalistic excesses of programmers seeking only to maximize audience are to well known to bear repitition. However, these excesses should not obscure the fact that educators can draw valuable lessons from commercial and entertainment techniques.

Below, we will review three paradigms, which may help radio educators attract larger audiences. Although they depart from the assumptions of the mass audiences, open-broadcasters, they may also help group-learning projects attract larger audiences. In either case, the result of larger audiences would be more cost-effective use of the world's dominant mass medium.

1. ADVERTISING

When they employed a successful New York advertising firm to assist in their educational program, Ecuadors's National Institute of Nutrition was guaranteed an innovative project. Never before had radio advertising techniques been so systematically applied to educational needs in a developing country.[4]

The difference in philosophy between traditional educators and commercial advertisers is extreme. Educators generally attempt to instill great changes(literacy, numeracy, job training) in small groups of people. Advertisers court a mass audience, and aim at more modest behavioral changes (switch from brand X to brand Y of an established consumer product).

While educators recognize individual differences and spend great amounts of time with their relatively "captive" audiences, advertisers relate quite differently to their audiences. Advertisers build

on mass needs and communicate through cultural sterotypes (such as the housewife using aspirin to cure a headache).

Advertisers use the "reach and frequency" method, repeated injecting the same short message into the pauses between the entertainment programs most popular with their target audience. In Ecuador, nutritional "spots" were repeated 10 - 15 times a day for over a year on popular radio stations in two provinces.

Each of the minute-long "spots" was designed to discuss a specific nutritional problem, and to offer a realistic and economical solution. Using a drama format each message was aimed at achieving very specific objectives:

Message on Protein-Calorie Malnutrition

To increase the frequency with which beans and other low-cost sources of protein are served; to increase the knowledge about which foods are sources of protein; to increase the knowledge about the function of protein in the body.

Message on Early Departure from Breast-Feeding

To increase the status of breast-feeding among poor mothers compared with giving other milk to their babies; to increase the recognition of the valuable attributes of breast milk as compared with other types of milk; to increase the knowledge about the steps for preparing other kinds of milk.

Message on Unsanitary Drinking Water

To increase the incidence and frequency of boiling drinking water for the family; to increase the understanding that drinking unboiled water results in illness; to increase the number of families who consider their drinking water to be contaminated or not pure; to increase the number of families that cover their drinking water.

Message on Parasites, Diarrahea, and Other Intestinal Problems

To increase the frequency of adults and children washing their hands after using the latrine, before eating or preparing food; to increase the use of soap when washing hands; to increase the number of respondents who understand that washing hands may kill parasites and will help to avoid illnesses.

Message on Iodized Salt

To increase the frequency of purchasing iodized salt; to increase the number of respondents who understand the cause of goiter; to increase the number of respondents who know that iodized salt is sold only in a distinctive package; to increase the number of respondents who understand that goiter is a serious illness.

Each objective and its corresponding message, represented the outcome of thorough and painstaking process. Experts in health and nutrition were consulted regarding priority problems. Recommended solutions were screened for their ability to be achieved by the target audience with only informational and motivational inputs. For example, experts in one country using this technique recommend that rural dwellers eat more liver. However, this type of meat was found to be both overpriced and unavailable to rural people. As a result, this solution was found unacceptable for advertising.

Once, a small number of appropriate themes had been chosen, messages were written, circulated to experts for comment and then produced in draft form. The messages were then pre-tested by playing them on cassette recorders in 100 to 200 target group households and discussing their attractiveness, effectiveness and credibility for the audience.

Once revised on the basis of pre-test data the messages were recorded,pressed on discs and distributed to the cooperating radio stations. A schedule was developed that responded to the target audience's media habits. According to project personnel, regular follow-up with the station was extremely important to insure adequate frequency. Once station personnel had heard the spots several hundred times themselves, they assumed the spots must have had their effect upon the audience and stopped playing them. However, according to U.S. commercial advertising experience, the spots were having their greatest impact at this moment, and needed to be continued.

1.1 Results

In interviews at the end of the campaign, most people in the target groups claimed to have access to a radio: 83% of coastal mestizos, 85% of highland mestizos, and 64% of the poorer highland Indians.

In a majority of households sampled respondents demonstrated awareness of the "spots" through unaided recall of specific information from each message. Attitudes toward breast feeding improved despite competition from advertisers of formula and powdered milk. The messages about the importance of eating protein, boiling drinking water, and washing hands before eating was also successful at the levels of awareness, knowledge and attitude.

The mass impact of this learning is amazing for the educator to contemplate. Despite planned oversampling of rural areas and low-income populations,projecting results to the level of the two provinces covered by the broadcasts gives a rough sense of the messages' impact. According to such a projection, the messages on protein, boiling water, washing hands, and lactation reached over 100,000 households. Even if these figures were off my a factor of 50%, some 50,000 households--probably a quarter of a million people--learned the basic nutritional concepts portrayed in the spots. And this audience resulted from a project active in only two of Ecuador's 21 provinces.

On the level of behavior change the iodized salt message was immensely successful. Whereas only 5% of highland mestizos used iodized salt before the campaign, fully 98% of those sampled who had heard the message had begun using iodized salt. On the other hand, few of the other messages--which were so successful at the level of awareness and knowledge--achieved significant behavior change. Why was this the case?

Although distribution was improved during the campaign, iodized salt had been available to the target group. There was no difference in price between the two types of salt. There was an established habit of consumption of non-iodized salt. Thus, the only major impediment to iodized salt usage seemed to be its lack of recognition as a nutritionally superior product. Thus, the situation was not too different from the "brand X - brand Y" situation where commercial advertising can perform so well.

On the other hand, the other less successful messages called for more significant changes in behavior. Several of the protein-rich foods recommended were relatively expensive. Legumes may not have been available. People may not have been used to eating legumes as a major part of their diet. In addition, boiling drinking water is tedious, and requires expensive fuel.

Part of the inability to document behavior change was methodological. People aware of the benefits of boiling drinking water or washing hands before eating tended to respond to interviewers that they do these things--whether or not they actually do them. Without participant observation research, it is very hard to verify such statements. On the other hand, iodized salt consumption can be verified by sales data and by looking for the products in the households of interviewees.

Another standard verification technique was recommended but could not be implemented. Commercial advertising research has shown that people who will not talk openly about their own behavior, often will do so in references to their neighbors. And, in answering such "reference questions", they often in fact describe their own true behavior. Ecuadorean authorities decided that this approach was not compatible with their culture, and would not allow its use.

Another type of limitation on behavior change might be described as policy-related. When a message is sponsored a national institution, and is broadcast throughout two provinces, it must be in full accord with national policy. For high impact the message must be clear, simple and direct. This requires a consensus on complex policy issues which is not always present.

For example the most powerful message on breastfeeding would have held that mother's milk alone is the best diet for infants. Some experts believed this to be true. Other experts including several from Ecuador's National Institute of Nutrition, felt that breastfeeding should be used only in conjunction with solid foods. The message used accomodated to this difference of opinion, and may have lost impact.

The most powerful message about boiling water would have been that all drinking water should be boiled. Some experts believed this to be true. However other experts believed that the drinking water in large areas of the country was safe to drink without boiling. Thus, the message used on this topic was also weakened in impact because of the type unresolved policy issue which affects all governments.

1.2 Implications

In spite of these problems, we do not wish to leave readers with the notion that advertising is only effective in "brand X-brand Y" situations. Much was learned from the initial Ecuadorean experience, which as improved the methods and results now being reported in subsequent projects. For example, in two countries, strategic decisions are planned for either building consensus in ambiguous policy areas, or for abandoning the planned messages in those areas. More extensive training of interviewers and use of additional research for cross-checking results are being incorporated into subsequent projects.

Furthermore, tentative results from other countries have already demonstrated success in more ambitious attempts to change behavior. In Nicaragua, nationally broadcast advertisements have motivated mothers of infants with diarrahea to prepare and administer in the home large quantities of fluids -- an idea which was previously unknown to them. The recipe for the beverage was heard on the radio and memorized. In this case, there had been consensus among Nicaraguan nutritionists that this was the correct remedy for dehydration. Information had also been collected on the cost and availability of the ingredients needed to prepare the remedy. As a result of the messages, the infant mortality rate should drop. Since one in five deaths in the country have been attributed to infant diarrahea, this short message could have a major impact upon the health situation in Nicaragua.

Thus, it would seem possible for advertising to deal with objectives larger than switches from uniodized to iodized salt. Although the range of objectives suited to this method remains undefined, certain basic limitations upon the method can be mentioned. Aiming at the mass audience, advertising treats problems which affect everyone and about which anyone can take invididual action. To date, the method has been applied to small, high-impact behavior changes which do not require input of new goods or services. While it could be used in conjunction with programs delivering goods or services (in health, nutrition or agriculture)advertising does not seem to be suited to promoting profound psychological changes in individual, or groups. This type of objective is perhaps better treated by the type of radio communication to be described below.

2. TABACUNDO [5]

In sharp contrast to the highly professionalized advertising approach is a program produced by rural people for rural people in Tabacundo, Ecuador. In the reach of Radio Mensaje's transmitter are an estimated 42,000 illiterate adults. Less than 3% of them are involved in the Tabacundo radio school. Since late 1972, the 40 radio school centers have worked with Padre Isaias Barriga to generate programs which are reaching the broader mass audience through open broadcast. In fact these broadcasts are said to draw bigger audiences than any of the entertainment programming available to the area's listeners. Does this sound improbable? Here is how they do it.

With an equipment grant of $1,500 from the University of Massachusetts Nonformal Education Project, Radio Mensaje acquired forty sample audio cassette recorders and a large supply of tapes. This equipment was entrusted to the "auxiliares", unpaid non-professionals from the local communities around Tabacundo who act as teaching assistants in the radio school centers. Each auxiliar has taken possession of and responsibility for a cassette recorder, which s/he uses to prepare and deliver tapes which are edited and broadcast by Radio Mensaje in two half-hour programs each week.

Called Mensaje Campesino ("The Farmer's Message") they are unlike conventional rural radio programs. Instead of using professional communicators to reach a farm audience, Mensaje Campesino is a program made by farmers for farmers. The program is not aimed at the organized listening groups of the radio school, but at the general open-broadcast audience. The promise was that farmers would be so interested in hearing themselves and their kind of radio that Mensaje Campesino could attract its own broad audience. This was proven to be the case.

The cassette recorder became the tool of the auxiliares to be used by them in or outside of the radio school classes. Training was minimal (2 hours) since the recorders are simple to operate. Everyone was interested in what the auxiliares would decide to do with the recorders, so the staff wanted them to feel free to use the recorders in any way that seemed worthwhile.

The project set out to create a new kind of radio communication that differed from the highly polished and artificial style of entertainment broadcasts transmitted from the capital. The major hypothesis was that popular expression could help define communications objectives and elaborate those objectives. In this way, the traditional

mass media concepts of "communicator" and "audience" would blur. The Project staff conjectured that programs which give voice to peasants might produce (1) heightened feelings of self-worth; and (2) increased community development knowledge.

An earlier report by AID (Astle, 1969) describing a radio school program in Honduras credits much of its success to the feeling participants had of "being part of an awakening group". This "groupness" is as important as the sense of individual accomplishment and harnessing of unused capability that comes with learning to read. Awareness of the similar experiences of other people and centers in Honduras was supported by training sessions and monthly meetings of the monitors or auxiliares. The report linked those factors closely with a growth in "confidence, concern, and group awareness".

The UMass-Tabacundo team surmised that heightened "groupness" is important to a growing sense of individual confidence. By increasing cross-fertilization and reinforcement through inter-village communication, the Project felt that possibly confidence and a sense of efficacy would grow.

That community development-related knowledge would increase was a relatively safe prediction. It seemed likely that if Mensaje Campesino reported on a development project in one community, other communities would listen -- and possibly with more interest than they had previously shown to programs on community development (CD).

A study done in 1971 (Vega, 1971) for Catholic Relief Services of Ecuador, OXFAM, and AID had concluded that although CD was given considerable emphasis by the station, the programs had an insignificant impact on radio listeners. It was hoped that cassette recorders would increase the impact of broadcasts by adding the dimension of grass roots expression from the many small communities served by Radio Mensaje.

Project planners were determined to preserve a non-directive stance regarding use of the recorders. Some early sentiment for using them as a vehicle for programmed instruction, distributing recorder cassettes as a supplement to the radio school curriculum, was discarded in favor of making the recorders a tool of the people themselves, used exclusively for their self-expression. Thus the Project could test whether campesinos are capable of using such a tool with imagination and effectiveness. If the auxiliares proved unable to figure out how to use the recorders to good advantage, there would be time later to introduce programmed materials and the like. Encouraging maximum flexibility would explore one end of the spectrum of possibilities. Later, experiments could be planned which would limit to some extent the auxiliares' latitude of operations, if that seemed desirable.

Padre Barriga's initial idea was to broadcast the material exactly as he received it in order to prevent his bias from influencing

the programs. However, he changed his mind before the project began. It was clear that if all the auxiliares sent in one cassette every week, or even every two weeks, there could be from 19 to 38 hours of material per week for broadcasting, which would be impossible. The necessity of editing was evident.

During training, the auxiliares brainstormed possible ways in which the recorders could be used. The UMass staff did not recommend or require any particular use, and Padre Barriga promised that the station would be interested in whatever was produced.

Results did not come in immediately as the pickup and exchange of the cassettes proved to be slightly more difficult than had been imagined. Padre Barriga waited until the initial meeting of the auxiliares in early November to pick up the first recordings, and the first program was broadcast on the weekend of November 11, 1972. In a meeting with Padre Barriga, the auxiliares decided that half-hour programs aired on Saturdays at 5:00 p.m., with a repeat on Sundays at the same hour, would have the greatest potential audience of farmers.

The first program consisted of comments about the radio schools, together with a little music produced by a group from one of the communities. The commentaries were collected from a number of centers, as well as from a group of 18 seminary students who were working in some of the radio school communities. The general tone was predicatably solemn and self-conscious. A seminarian:

> I want to work with campesinos on both a cultural and religious plane, to help them advance. I plan to acquire a greater experience in order to be more effective -- country priest when I return to my province.

The auxiliar in the center at Chaveznamba:

> We want to sent our best greetings to Padre Isaias Barriga, to our dear teachers in the radio school, and to our fellow students in the province of Picincha, as we begin this new course. Everyone is interested in the recorders, although they're a little afraid of talking. However, we hope that little by little we'll be able to adapt to this new idea. As yet, it's a little strange.

All of the students interviewed professed their great happiness at being in the radio school, and their assurance that this would be the best year yet.

2.1 Content Analysis of Selected Programs

November 25: By the third program, there was more content of a community development nature. The community of Ucshaloma, high on the

mountain behind the town of Tabacundo, recorded a meeting in which they decided to get together the following Saturday for a minga, or community work project. They were in the process of upgrading their living conditions, having formed a co-op, and jointly built a new house for each of the members. Having recorded this meeting, they proceeded to record the sounds of work when the minga took place. One heard hammers behind the voices of the workers as they discussed their progress and needs.

December 30: This program consisted entirely of a Christmas Special, put together by the auxiliar and students of the center at Cananvalle. The auxiliar, a campesino farmer, preached; the students read from scripture, and gave greetings to their fellow students in the other radio schools.

January 20: This program began with a recording of the January general meeting of auxiliares. They did not discuss the recorders specifically, but there was a unanimous request for more programming time, possibly just before the beginning of classes. This was acted on in February, with a Monday repeat of the regular Sunday program presented at 4:30 p.m., just before the 5:00 class.

Another effect of the recorders was obvious in the January 20 program. Musical groups presented songs in Quechua, with participation of women; members of the Simon Bolivar school read original poems, and yet another school, Cochas, presented music especially prepared for the Mensaje Campesino program. The songs in Quechua may be said to reflect some elements of the "Indian is Beautiful" philosophy, although it is too early at this writing to make a conclusive statement.

February 24: Indian power was mentioned in this program, as it opened, with an auxiliar interviewing the president of the new National Indigenous Movement (NIM), Jose Antonio Quinde. Quinde described the organization's aims and progress to date, and mentioned a series of meetings to learn whether NIM was seen as useful by the indigenous population. More Quechua music preceded a new element: new readers practiced reading pages from the text, Cultivemos Hortalizas, providing a possibly comforting standard of comparison for the other students for whom reading aloud is still a painful experience.

To summarize the programs: music will apparently continue to be an important part of the content, and community development emphasis will be substantial. The students seemed to have a strong sense of participation, and fear of the recorders was not mentioned after the first program. Auxiliares showed considerable capacity for innovation in the use of the recorders. Padre Barriga tells the story of a group who convinced an engineer from the Hydraulic Resources Ministry to be interviewed for the Mensaje Campesino program. His answers to their questions about the possibilities and difficulties in obtaining running water provided valuable information to members of other centers.

2.2 Community Uses of Recorders

Some communities have begun to produce and record dramas with moral and/or social messages. Taking different roles, community members act out and discuss problems which are then shared with other communities by means of the radio.

One community used the recorder as a way to guarantee that what they were being told by an official from another development program would not be forgotten. The recorder was kept hidden under a poncho until the meeting (which was apparently filled with promises of imminent action) was over; they then brought it out and played back the tape, demonstrating to the official that his words had fallen on sensitive plastic as well as on eager ears. His reactions to the taping were not recorded.

2.3 Production Method

Blank tapes are provided to the auxiliares, who assume responsibility for getting them back to the station in Tabacundo as soon as they have some material they wish to be used on Mensaje Campesino. Once a tape is received in the station, it is reviewed by Padre Barriga or his assistant. They use two cassette recorders to edit the material and compile a half-hour program each week. The program cassette is saved, and the other cassettes are sent back to the communities.

The programming has been expanded since the Project began. At first a single half-hour program was aired both Saturday and Sunday. After the first couple of months Padre Barriga decided to produce different programs for the two days. Then following the meeting of auxiliares mentioned above, the station began to re-broadcast the Sunday program on Monday afternoons just before the first cycle class of the radio school.

2.4 Replicability

Most students in the Third World's radio schools would never be able to buy recorders and cassettes on their own. It does seem possible, however, that the typical radio school would be able to take care of maintenance and operation costs. Padre Barriga actually paid all of those costs during the year, although with a view to recovering at least part of them from the UMass Project.

From the standpoint of USAID, the international organization which financed the purchase of the recorders and tapes, the cost ($1500) is miniscule. The attractiveness of such a project to international funding sources in other settings would depend upon several factors. Recorders will have to be demonstrated to be reliable under prolonged field conditions. The interest of rural people in grass roots radio will have to be maintained when the effects of novelty diminish. And

finally, projects will only be feasible in political climates where governments will allow the major mass communication medium to be used for free public expression.

In many countries of the Third World, such an open and positive use of radio as an open-broadcast mass medium cannot be contemplated. As the mirror image of manipulative advertising communication (which is embraced by every country), the Tabacundo model is an intensely honest and participatory type of communication. It represents a potential component of a type of social change which could build on indigenous culture. It is perfectly suited to the larger educational objectives which more manipulative forms cannot address. It is suited to dialogue, to consciousness-raising, to affective emotional changes.

Padre Barriga saw the value of this method in two ways. First, it gave the farmers the "power of the word". It enabled them to communicate with each other and with him, the head of the radio station and of the radio school. Previously, their only alternative had been to scrawl letters to him, which he read over the air. They were not at ease with writing and could not express themselves fully; what they managed to say was then transmitted back to them through the cultured tones of the Padre's voice.

An even greater change cited by Padre Barriga was the transformation of radio -- a medium which had previously transmitted only urban music, urban voices, and urban values -- into a rural medium which spread what he termed the "mystique of the countryside". He saw the new type of radio communications as a reinforcer of the goals and satisfactions of country life.

Perhaps this final point highlights the potential of the Tabacundo model for development education. Realizing that radio reaches the world's rural masses is not enough to make it into a rural medium, which can build rural culture, and contribute to healthy rural development. If radio reaches farmers from the cities with urban messages, it may speed the migration to the cities rather than promote rural development. The Tabacundo model offers a starting point for making radio a rural mass medium in the true sense. Such participatory communications can tailor the style and content of rural radio to the needs and desires of the audience.

However, one should not view the Tabacundo approach of totally participatory, localized communication as an absolute. Participatory techniques do not have to be incompatible with the professional communication techniques described in the previous section. In the next section, we will examine a radio format which includes both participation and professionalism. Grass roots participation is used within a structure designed by professionals for maximum appeal and impact.

3. THE REAL WORLD QUIZ

The quiz show format seems especially suited for open-broadcasting. In its commercial form it has already proven its ability to attract a mass audience, and we see no reason why the trivial or esoteric content typically found in commercial versions could not be replaced by questions and answers dealing with more substantial and useful information.

The educational quiz show, although it has shown itself to be an effective educational tool in a laboratory setting (Theroux, 1975), has yet to be used on a radio station. We will give some general principles for designing educational quiz shows and then describe in detail one format that could be used to convey information on any topic.

To be pedagogically sound, a quiz show must meet certain criteria in format, rules, and production techniques. Some of the criteria differ from those of commercial shows currently being aired. Repetition, for example, is not a common feature of commercial shows. But a program that is used as a teaching tool must repeat the information being "taught". Facts given more than once must be presented in different contexts. Quiz programs, which often have several phases where the rules change or the stakes go up, are amenable to such repetition.

Another criterion is varied auditory stimulation. In addition to the voices of the contestants and moderator, buzzers, bells, music, and applause serve to maintain a high level of listener attention. There must be both predicatable and unpredictable sound patterns. Predicatable patterns serve as cues that help the listener organize information. For example, a certain buzzer should consistently indicate the right answer was given. Unpredicatable sounds can add elements of surprise and excitement without causing confusion.

As a general rule, an educational program should use contestants with whom the audience can identify, although celebrities also make attractive contestants.

An educational quiz program probably need not be explicit about its goal (namely, education). The excitement created by competition, prizes, fast pacing, and music should be sufficient to attract an audience. Entertainment can facilitate education by insuring a high level of audience attention.

A number of factors account for the long-standing popularity of commercial quiz programs in America. In addition to the excitement generated by competition and prizes, most shows are laced with humor, time pressures, challenging questions, music, glamor, and pizzazz.

Viewed from the production standpoint, commercial game shows are awesome. Their gadgetry, timing, sound effects and sound mixing, suspense, and surprise could hardly be reproduced by amateurs even if they had all the proper equipment. But educators should not be frightened away, because the essential elements can be created with little difficulty. Game rules, for example, are often ingenious but simple. Also, there is no reason to believe that a quiz would cost any more to produce than straighforward presentation such as a lecture or a panel discussion.

3.1 A Usable Format

The key to any successful game show, whether for educational or entertainment purposes, is to find an appealing format. There are infinitely many possibilities. For the sake of those who do not have the time or inclination to design an orginal game format, we will here describe all the ingredients (e.g. rules, script, equipment) for producing a game show that can convey information on any subject. We will call it the "Real World Quiz Show". You should feel free to give it any name you choose.

The Real World Quiz Show is a synthesis of several commercial formats and some original ideas. It is comprised of two rounds, each followed by a "Memory Minute" in which one contestant has the opportunity to win bonus points by recalling facts given in the round just completed. In round 2, both the "opening" questions (multiple-choice type) and the "bonus" questions (true-false) double their value. The format is quite simple and was chosen for its efficient use of time. We have found that in a twenty-minute show, sixty questions can be asked and answered.

3.2 Equipment and Personnel Requirements

The game can be played with three or four contestants. They should be selected for their eagerness to participate and their lack of shyness. The most important person in the show is the moderator, who should have a high energy voice and manner, and a quick mind which can capitalize on rough spots in the production by making jokes about the problems. Behind the scenes two more persons are needed. One of these can serve as the assistant announcer, scorekeeper, and live sound effects man. The other works in a control room as the sound director. Besides monitoring sound levels, he dubs in any pre-recorded sound effects.

Each of the contestants and the moderator should have a Lavalier microphone if at all possible. It is best to have two reel-to-reel tape recorders, one for the live voices, the other for recorded music to introduce the show and to mark transitions in the game proceedings. Each contestant should have a sound device of some sort which

he activates when he thinks he knows the answer to the moderator's question. Buzzers are good. It is preferable to have the contestants' devices of the same type but of different tones, three bells of different tones, for example. A metronome is desirable for the "Memory Minute", but any method of making a regular tapping noise will suffice. Another sound device, different from all the others, is needed to mark the end of the rounds. Two more are required to signify wrong and right answers, respectively.

3.3 Content

As mentioned earlier, the Real World Quiz Show can transmit objective facts on any subject. Half the questions should be true-false type, half multiple-choice. Of course, the level of difficulty should be commensurate with the knowledge that the producer estimates already exists in the target audience. It is ideal to choose an assortment of questions of which a typical listener could correctly answer fifty percent. This gives the listeners enough encouragement to feel good about himself and enough novelty and challenge to prevent boredom.

Approximately sixty questions can be asked and answered in a twenty-minute period. For a program of this length the game producer should write about 80 questions on the chosen topic. These should be pre-tested with a small group, none of whose members will later be contestants. Through pretesting, questions that are ambiguous, esoteric, too simple, or too difficult can be revised or eliminated.

The final list of questions should be typed, leaving about four spaces between each and indicating the correct answers for the sake of the moderator. In two-thirds of these spaces the producer should insert comments that the moderator will read to reinforce the answers given by the contestants. So, rather than simply saying "yes" or "that's right" when a contestant gives a correct answer, the moderator will say "Yes. Vitamin D is good for bone development." Or, "Yes, now you know why Vitamin A is added to milk."

The other answers that are not reinforced in this way should appear in the Memory Minute. This is insured by making a list of key words or phrases, each of which refers to one question-answer pair that would already have been given on the show. The list is given to the Memory Minute contestant just before the Minute begins and aids him in recalling information that will earn him points. The Memory Minute, like the moderator's reinforcing comments, is a vehicle by which facts can be repeated, a requirement for audience retention of information.

3.4 Producing the Show

The key to a smooth, natural, spontaneous production is the program script. It includes directions for the sound director and the

moderator. The contestants do not need a copy of the script. The contestant's performance is unrehearsed. Before taping or airing begins, the moderator should explain the game rules to the contestants. The show can be broadcast live if the production team is experienced. Otherwise it should probably be taped for later broadcast. If blunders occur while taping, the moderator and contestants should stop, re-orient themselves, and begin again. The tape can be edited later. Not all awkward moments should be edited out; the producer should judge which rough spots add humor to the show and which simply detract from its effectiveness.

Since the script is so essential to a smooth-running show, we include a production-ready sample here. It only lacks the names of the people who will be participating in your own production. With this script and a list of questions, you have all you need to produce an effective game show.

Script for the "Real World Quiz Show"

(Sound Director's Cues in CAPS)

THEME MUSIC BEGINS

MUSIC VOLUME DECREASES when assistant announcer says:

"Today contestants match their knowledge of (____topic____) for big prizes. The star of our show has the answers, and here he is, (____name____!)"

APPLAUSE BEGINS

"Hi, everybody. (MUSIC STOPS HERE AND APPLAUSE FADES.)

Thank you and welcome to the Real World Quiz Show, where real world knowledge brings some unreal prizes. We'll tell you about those a little later."

"Let's get started by meeting our contestants."

"First we have a (____job____) from (____town____), (____name____.)"

(APPLAUSE and some response from the contestant.)

"Next we have a (____job____) from (____town____), (____name____.)"

(APPLAUSE)

"Finally we have a (_____) from (____town____), (____name____.)"

(APPLAUSE)

"Now, players, the rules are simple. In Round 1, when I ask a question, the person who responds first and answers correctly gets 25 points. That person is then eligible for a bonus question worth 50 points. When Round 1 is over, you'll hear this sound - (MC rings sound device). Whoever has the fewest points then has a chance to catch up by recalling as many of our quiz answers as he can in 60 seconds. So, while we're playing, try to remember our questions and answers, because you may need to recall them later in the show during our Memory Minute."

MC explains that the source of our answers is the Encyclopedia Brittanica (or some other appropriate book or person).

"Players, are you ready?" (Players respond.) "First, let's see if our answer buzzers (or bells or whatever) are working properly."

MC asks each contestant in turn to sound his buzzer.

"OK, let's begin!"

MC proceeds with Round 1 questions and answers.

MC disqualifies a respondent if he takes too long in answering the question. He then gives one of the other contestants a crack at it if one of them buzzes.

When a person gives a wrong answer to an introduction question (i.e., not a follow-up or "bonus" question), the moderator says "Wrong" and then gives the other contestants a chance to answer it.

MC should read the Supplementary Remarks which are found on his question sheet after most of the questions. These remarks should be handwritten on the question sheet.

After the last question in Round 1, a bell (or whatever) sounds.

(MUSIC AND APPLAUSE BEGIN SIMULTANEOUSLY.)

(MUSIC CONTINUES — APPLAUSE CONTINUES.)

"All right players, that marks the end of Round 1."

(MUSIC AND APPLAUSE FADE OUT near the end of the above sentence.)

"Now let's look at the scores."

"____(name)____ has _____. (# of points, lowest person first.)
"____(name)____ has _____. (# of points, middle person next.)
"____(name)____ has _____." (# of points, highest person last.)

(APPLAUSE AND VERY BRIEF MUSIC)

"____(name)____ has the fewest points, but she/he can catch up in our Memory Minute.

"Now, __(name of low point person)__, you will have 60 seconds to recall any or all of the answers that were given in Round 1." (MC hands the contestant the key word list. The recalls must be in sentence form.) "For each correct fact that you recall, you'll receive 35 points. You'll hear this sound (triangle or bell) every time our judges accept your response. Are you ready?" (Contestant responds.)

"All right, begin." (Tick tock in background.)

At the end of 60 seconds the triangle (or whatever) rings, the tick tock stops and the MC announces the number of points the person has won.

(APPLAUSE)

MC reviews score. (APPLAUSE at end of review.)

MC announces round 2 where:

a. opening questions are worth 50 points;

b. bonus questions are worth 100 points;

c. there will be another "Memory Minute".

"At the end of Round 2 we'll know who today's winner will be. That person will receive some very nice prizes.

____(Assistant Announcer's name),___ tell us about it."

MUSICAL BACKGROUND

(Assistant announcer lists and describes the prizes.)

APPLAUSE AT THE END of his speech.

"OK, contestants, that's what we're playing for. Good luck to you all in Round 2."

Round 2 questions and answers proceed in the same fashion as Round 1. At some point near the end, however, the MC may wish to summarize the scores quickly (especially if it's a close match).

After the final Round 2 question, the triangle rings. (MUSIC AND APPLAUSE begin while it is ringing.)

MC reviews scores. He identifies the low-point person who then gets a chance to catch up in the Memory Minute where each recalled fact is worth 100 points.

(Tick tock during the Memory Minute. Bell sounds for every correct recall.)

MC announces the number of points that the Memory Minute player has won.

(APPLAUSE)

MC reviews scores of all three players and announces winner.

(APPLAUSE AND MUSIC)

MC says that the winner has earned the right to return and compete on next week's show.

MC says he hopes that everyone enjoyed the show and would tune in next week for the "Real World Quiz Show".

"Goodbye."

(APPLAUSE AND MUSIC BEGIN SIMULTANEOUSLY and continue in the background while the assistant announcer says:

"Today's contestants will receive _____(list of small prizes)_____.

"This has been a _____(radio station name)_____ production."

MUSIC AND APPLAUSE FADE OUT.)

(END)

A show was produced at the University of Massachusetts using the above script. It was laboratory-tested, with one hundred twenty (120) university students and compared with a taped lecture which contained the same information as did the taped quiz show (Theroux, 1975). We found that people learned significantly more from listening to the quiz show than they did from listening to the lecture. Apparently, the quiz show was better able to hold the attention of the listeners. Since at least one quiz show was proven to be an effective educational tool, what are the implications for educators interested in open-broadcasting?

First we should discuss what quiz shows can and cannot do. They are cetainly best suited for trasmitting hard, objective facts. There are few programs which deal in abstract concepts and principles. ("What's My Line?" may be an exception.) New facts will be readily received and probably applied if the listener has an adequate conceptual framework into which he can integrate new information. Hence, quiz shows might be good as summaries or reviews for certain courses of radio study. They might also effectively give up-to-date facts on changing phenomena such as farm prices. In general, quiz shows should be used as one prong in a multi-pronged approach to education.

Although cost figures are unavailable, there is no reason to think that a quiz show would be more expensive to produce than a relatively straightforward presentation such as a panel discussion. Tradition and lack of imagination explain the preponderance of dull presentations on topics such as public health. If quiz shows can attract large audiences and impart information effectively, they merit further exploration. The quiz show is a feasible open-broadcasting strategy because it can be as entertaining as it is informative.

Nonetheless, there are substantial issues to be resolved about the limitations of the quiz show format for education. Followers of Paulo Freire would no doubt allege that the format is incompatible with liberating education, that it concentrates exclusively on facts, and that it portrays facts as absolute realities. They might also contend that it reinforces the "banking education" notion of the all-knowing teacher (quiz show moderator) and the lowly student (contestant).

Both of these criticisms can be taken as challenges to those who implement and develop the format for Third World education. One can try the format in areas of affective learning. One can attempt to portray facts and "correct answers" not as absolutes, but as derivatives of specific value positions. A quiz show might entail reconstruction of the value set underlying a given presentation of facts.

The second criticism that quiz shows reinforce traditional dichotomies between teacher and learner might also be challenged by creative design and production. Gunter executed an agricultural quiz show in Ecuador wherein there were no correct answers to the questions. Rather, the contestants had to come to a consensus regarding the preferred answer. By choosing young village leaders as contestants, the producer was assured of getting creative and dynamic answers to the questions posed. The format could be stretched even further, if problems were posed rather than questions asked. It might even be possible to structure into a quiz show dialogue on a problem leading to a group solution to the problem. This type of quize show might meet the concerns which Freireans would voice regarding standard quiz shows.

4. CONCLUSION

What is the difference between the above ideas and the usual approach to educational radio for the Third World? We are thinking primarily in terms of the radio programming itself, rather than the face-to-face activities, the print materials, or the organizational and administrative concerns that often surround radio education. We contend that the organized audience strategies have caused non-radio concerns to predominate in the literature on educational radio. It seems clear to us that the most efficient way to expand educational radio's reach is to begin to produce radio programming that will attract its own audience -- quality open-broadcast programming.

We have merely touched upon three signposts which indicate how this might be done. The advertising approach is suited to motivation for accomplishing concrete bite-sized behavioral objectives. The Tabacundo model presents a mirror image of total decentralization and participation in open-broadcast radio. Finally, the quiz format allows for audience participation in a structure which is determined by professional communicators. The quiz show combines the manipulative motivation of polished production technique with spontaneous participation by people the audience can identify with. The exact role of each of the three approaches, the objectives to which they are best suited, the situations and populations to which they are best applied, will be determined by field application and development of the above notions.

REFERENCE NOTES

The views expressed herein are those of the authors and do not necessarily correspond with those of their employers. Portions of this article appeared in the June, 1977 issue of Prospects, and are reprinted with UNESCO's permission.

1. These statements are based on figures in UNESCO Statistical Yearbook of 1974 (which covers 85 countries) and in World Communications 1975. The category of educational programming encompassed out-of-school education for children, youth and adults as well as formal education.

2. Other types of radio programming are frequently reviewed in the quarterly Development Communication Report available free of charge from the Clearinghouse on Development Communication (1414-22nd Street N.W. Washington, D.C. 20037, U.S.A.) which is supported by the Technical Assistance Bureau of the U.S. Agency for International Development.

3. Emile McAnany Radio's Role in Development: Five Strategies of Use (available free of charge from the Clearinghouse on Development Communication) and Emile McAnany "African Rural Development and Communication: Five Radio-Based Projects." Stanford, California: Institute for Communication Research, 1975, mimeographed.

4. Our account of this project is based on reports from the contractor (Manoff International) to the funding agency (the U.S. Agency for International Development), and on discussions with project personnel. For further information contact Manoff International at 2080 L - Street, N.W., Washington, D.C., 20036, U.S.A.

5. For more detailed information, see James Hoxeng, Alberto Ochoa, Valeri Ickis, Tabacundo: Battery-Powered Dialogue, which is available in Spanish or English from the Center for International Education, University of Massachusetts, Hills House South, Amherst, Mass. 01002, U.S.A.

CHAPTER XI

RADIO FORUMS: A STRATEGY FOR RURAL DEVELOPMENT

Everett M. Rogers and Juan R. Braun
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The purpose of this chapter is to derive a series of generalizations about the role of mass and interpersonal communication in rural development from a review of past research and program experience with radio forums. We intend that these generalizations might not only provide useful understandings about the operation of radio forum systems in developing countries, but that they also represent a step toward the broader issue of how better to utilize the mass media for development purposes, whether the medium is radio, television, or print.

1. WHAT ARE RADIO FORUMS?

A radio forum is a small listening and discussion group that meets regularly in order to receive a special radio program, which the members then discuss. On the basis of the program and discussion, they decide what types of relevant action to take. This sequence of activities is expressed in the motto of the Canadian forums: "Listen, discuss, act." Emphasis in radio forums is usually placed not only on creating knowledge of new ideas, but also on putting them into practice.

We limit our discussion in this chapter to radio forums, although we acknowledge that this topic is closely related to other types of media forums (like television forums or print forums, which are widely used in the People's Republic of China) and to other types of radio listening groups (like the radiophonics schools in Latin America and the radio listening group campaigns in Tanzania, both of which are featured in other chapters of this volume).

The basic idea of radio forums for rural development grew out of early experiences with radio listening groups in England and other European nations and was first implemented on a national scale for rural development purposes in Canada in 1941. Rural radio forums then spread to India, where the concept was first tested in a UNESCO-sponsored field experiment in the mid-1950s, and later implemented on a nationwide basis. Since then, many countries in Asia, Africa, and Latin America have been the sites of field experiments, pilot projects, and large-scale programs of radio forums for rural development. In a later section of this chapter, we shall (1) trace the historical development of radio forums in greater detail, and (2) draw some comparisons with other media forum approaches.

The basic elements of most radio forum systems are:

1. Organizers who establish the forums and help service them.

2. Written discussion guides that contain information and discussion questions that are distributed to forum leaders prior to the radio broadcast to which they pertain.

3. Regularly scheduled radio programs beamed at forum members who gather in a home or a public place to hear the broadcast and then discuss its contents.

4. Regular feedback reports (a) of decisions by the forum members, and (b) of questions of clarification to the broadcast programmers.

The basic underlying assumption of all media forum systems is that multi-channel communication is more effective than single-channel communication. When more than one channel act in concert to convey messages about a common theme to the same audience, a kind of synergistic advantage is usually achieved. The communication effects attained by two or more channels together are greater than the effects of any single channel alone. This multi-media advantage is greater when the channels involved are maximally different from each other in certain respects, as when one is a mass medium and one is interpersonal.

We define mass media as all those means of transmitting messages that involve a means, such as newspapers, magazines, film, radio, television, etc., which enable a source of one (or several individuals) to reach an audience of many. Interpersonal channels involve a face-to-face message transfer between two or more individuals, who may be family members, neighbors and friends, and others.

Table 1 summarizes the main characteristics of mass media and of interpersonal communication channels, and of the two in combination (as in radio forums). In short, mass media alone can reach a larger audience at the price of a lesser message impact, while interpersonal communication provides a greater message impact at the price of a smaller audience. This inverse set of relationships lies at the heart of the particular advantage of radio forums (Beltran, 1969).

1.1 Advantages of Radio

In terms of mass media, radio is the main channel used in forum programs in most countries, but printed material may also be used in forum systems, as in China. Radio forums have several advantages over other types of media forums. For example, illiterate people can understand the message transmitted via radio. Also, radio signals can be received despite geographical isolation or barriers such as mountains

TABLE 1

Main Characteristics of Mass Media, Interpersonal Communication and the Two Channels in Combination

Characteristics	Mass Media Channels	Interpersonal Channels	Mass Media Combined with Interpersonal Communications (as in Radio Forums)
1. Direction	One-way	Two-way	Two-way
2. Time to reach a large audience	Rapid	Slow	Rapid
3. Accurancy within a large audience	High	Low	High
4. Ability to overcome selective exposure and selective perception	Low	High	High
5. Feedback	Little	Much	Much
6. Ability to answer local needs of the audience	Low	High	High
7. Most likely main effects	Increased Knowledge	Attitude Change	Increased Knowledge and Attitude Change

that impede television or surface-based mass communication (such as the print media) which require a delivery system to the local level. Only a small, cheap battery-operated radio receiver is needed in each radio forum and, in fact, most villagers in Latin America, Africa, and Asia now own radio sets. Radio has the advantages of time, cost, and localization (McAnany, 1973):

1. Time--The broadcast signal is immediately received by listeners. The widespread availability of cheap transistor sets guarantees virtual coverage of most countries, even among the poorest villagers. Radio can reach all the population at the same time.

2. Cost--The outlay for radio is much lower than for television and for most other media, both for the program producer and for the audience members receiving the program. Jamison and Klees (1973) estimate that instructional radio is about one-fifth as expensive as instructional television. On the other hand, radio requires about 33 percent more printed matter (such as discussion guides and follow-up reading booklets) to equal the combined audio and visual impact of television.

3. Localization--Radio is a relatively inexpensive medium that enables each local station to serve a relatively limited geographical area with the same language, culture, and interests.

1.2 Radio Forums and Illiteracy

It is often said that illiteracy is a barrier to development in that adult literacy is a prerequisite to effectively changing the behavior of villagers and urban poor. If this is indeed so, the rural development potential for many developing countries is very limited, at least in the next several decades, because of their high illiteracy rates and the general lack of success of most adult literacy programs. For example, in Pakistan today illiteracy rates are 90 percent of the adult population in many rural areas, and while the proportion of the appropriate age group enrolled in primary school nationwide is increasing, it was only 45 percent in 1975 (61 percent of the male children and 27 percent of females). Only about 20 percent of Pakistan's children are receiving primary education up to five years, a level generally considered necessary for attaining functional literacy. Pakistan has about 40 million illiterates, and approximately one million more are added each year. They are especially concentrated in rural villages. Pakistan's case may be a particularly bleak picture for adult illiteracy, but comparable rates are found in India, Bangladesh, Indonesia, and many African and Middle Eastern nations. Public resources

are simply unavailable (1) to provide elementary schooling to all children, which thus negates the preventive approach to future illiteracy, or (2) to train most adult illiterates to read and write.

We dispute the assumption that illiteracy is a complete barrier to rural development. The broadcasting media have the potential of "leaping the illiteracy barrier" in conveying rural development messages to village audiences, as has been illustrated in several developing nations in recent years. Radio and television, when coupled with some type of organized group reception at the receiving end, and backed up with the local availability of development inputs and resources (like new seeds and fertilizers, for example), can bring about development among illiterates as well as with literates.

The listening/discussing group, if composed of at least one or more literates along with a majority of illiterates, acts to pool the knowledge and expertise of the group members in a way that closes the previously existing gap between literates and illiterates (Neurath, 1960). Tables 2 and 3 present the results of the Poona field experiment on radio forums in India (to be described in greater detail in a later section), which show:

1. When villagers were organized in forums, the impact of the radio broadcasts was much greater on the degree of knowledge gained. 1/

2. Illiterates gained slightly greater knowledge than literates when members of radio forums, but not otherwise.

The second research finding has not been widely studied elsewhere, and we cannot be sure that illiterates will consistently outgain literates; perhaps the Indian results are due to the relatively few illiterates in the typical forum (only about 16 percent of the forum members were illiterates), or to other idiosyncratic factors. But if the findings of the Poona field experiment are at all valid, they certainly indicate that illiterates as well as literates are affected by their knowledge of the content of the radio broadcasts.

1.3 Advantages of Group Listening and Discussion

What are the advantages of organizing the receivers of mass media messages in listening/discussing groups like forums?

1. Attention--They are more likely to attend to the message and focus their interest on the message content. Group pressure and the group leader's influence thus serve a control function in uniting and directing the members' attention.

TABLE 2

Individual Knowledge Gain for Villagers in Forums and for Non-Forum Villagers, With and Without Radio

Experimental Treatments	Average Knowledge Scores (on an 18-point scale) for Individual Villagers		
	Pre-Test	Post-Test	Gain
1. Forum (n=20 villages)	6.4	12.1	+5.7
2. Non-forum with radio only (n=8 villages)	5.5	7.0	+1.5
3. Non-forum with no radio (n=10 villages)	3.9	4.6	+0.7

Source: Neurath (1960, p. 136).

TABLE 3

Individual Knowledge Gain for Literates and Illiterates in Forums and Non-Forums

Experimental Treatments and Respondent Types	Average Knowledge Scores (on an 18-point scale) for Individual Villagers		
	Pre-Test	Post-Test	Gain
1. Forums			
a. Literates (n=266)	7.1	12.2	+5.1
b. Illiterates (n=43)	3.1	9.4	+6.3
2. Non-Forum			
a. Literates (n=194)	5.3	6.5	+1.2
b. Illiterates (n=60)	2.1	3.1	+1.0

Source: Neurath (1960, p. 155).

2. Media Integration--When multiple channels are utilized to carry a common message theme, they can be presented to receivers in a unified and integrated manner when the individuals are together in a listening group. Otherwise, each of the multiple channels is likely to reach a somewhat different audience, or to reach the same receivers at different times, thus losing some of the synergistic effect of the multi-media campaign.

3. Persuasion and Action--Attitude change is more likely to occur when participation and group influence are present. Group listening and discussion is more likely to lead to action than is individual reception.

4. Feedback--Group reception of the mass media facilitates the formation of feedback messages and provides a channel to convey them to the mass communicator.

2. ORIGINS OF RADIO FORUMS

The first experiences with radio listening/discussing groups were in Europe. The idea of linking radio with interpersonal channels originated in England in 1928, according to Cassirer (1959), and then spread to Norway, Switzerland, and Czechoslovakia in the early 1930s. Radio forums started in Germany around 1940. In 1929, a year after radio forums started in England, groups of American parents listened to regular radio broadcasts from station WEAO at Ohio State University.

However, it is acknowledged that even prior to 1928, experience with media forums had already begun in Soviet Russia. "Study groups" were started throughout Russia, using print media such as newspapers, which were read and then discussed in the forums. These study groups were considered by Lenin to be a key tool in the "agitation and propaganda" apparatus of the Communist Party. The use of print forums spread from Russia to China, where they were used since the early 1930s by the Communist Party to train cadres. After 1949, the techniques of using such study groups were perfected by the Chinese Communists for use with the mass public as part of political communication activities and for such development campaigns as pest erradication, family planning, and farm communalization. Hiniker (1966) estimates that perhaps 70 percent of the adult population in the People's Republic of China participated regularly in study groups in the mid-1960s.

Canada's farm radio forums began in 1940 when a special committee established by government and private educational agencies was set up to plan and put into action a system of radio forums. After a year of intense preparation, the first program was aired in January 1941 (Nicol and others, 1954). The Canadian system was the first truly

nationwide network and the first to be aimed mainly at rural people. These are two reasons why the Canadian experience represents a working model for other countries, a model that was copied directly in India and in Ghana (as will be described shortly), and somewhat less directly in more than a dozen other countries. India, starting in 1954, was the first developing country to adopt radio forums as a strategy for nationwide rural development. A similar approach has been followed in the 1960s and 1970s, at least on an experimental basis, in Ghana, Nigeria, Togo, Niger, Dahomey, Malawi, the Malagasy Republic, Jordan, Pakistan, Indonesia, Japan, Costa Rica, and Brazil. UNESCO played an important role in the cross-national diffusion of radio forums from Canada to India, Ghana, and Costa Rica, and in sponsoring research on the effectiveness of forums in contributing to rural development.

By no means have all of these radio forum systems maintained their vigor over the years. The English forums died out after about a decade or two, and Canada's rural radio forums ceased in 1965 after 24 years of large-scale operation. So the Canadian forums were dying out at about the same time they were being widely copied in Latin America, Africa, and Asia. The rural forums in Canada were mainly intended to encourage farm people to solve their local community problems, to break down rural isolation, and to develop community leadership, rather than to convey technical information about agriculture and other rural development topics. So when farm isolation and community inaction were no longer felt to be serious problems in Canada, interest in radio forums dropped off. In one sense, the forum system worked itself out of its original job.

3. THE POONA EXPERIMENT ON RADIO FORUMS IN INDIA

Probably no other developing country has paid so much attention to rural radio forums as a tool for modernization as has India. The most important evaluation of the Indian forums, which took place in the former state of Bombay (now Maharashtra), is commonly known as the Poona project, because this city was the headquarters of the five Bombay districts in which the research was undertaken. An independent research organization, the Tata School of Social Sciences, conducted the field experiment with UNESCO assistance.

Forty villages were selected for the experiment; 20 of them had radio forums, 10 had raido sets for about a year before the experiment started, and the other 10 were provided with receivers for the project. Personal interviews with forum members and direct observation of the operations of the forums during the broadcasting and discussion were the main methods used to collect the data.

Previously in this chapter, in Tables 2 and 3, we presented Neurath's (1960) main findings from the Poona experiment. The greatest difference in the increase in knowledge between the forum and the radio-but-no-forum respondents is a clear indication of the superiority of organized group-listening-plus-discussion over individual unorganized reception. Also, the radio forums tended to bring into the open a good deal of knowledge that was latent in the villages. The peasants themselves provided the means to solve many of their common problems by discussing alternative ways of action to cope with the particular problem at hand.

3.1 India: After Poona's Project

The Poona project clearly indicated the superiority of the rural radio forums in India. Several factors accounted for its success:

1. The project was the center of attention of many institutions and influential officials.

2. The experimental treatments were brief, lasting only 10 weeks. This period may not have been enough time for the participants to become weary, as in non-experimental conditions, when the radio forums are expected to last for years.

3. The project had ample financial and staff support, with highly-trained personnel and financial resources that are usually scarce in developing countries.

Schramm and others (1967a and 1976b), in a thorough analysis of India's experience with radio forums, raised the important question of "whether the forum itself is a less potent tool than had been thought, or whether it is being used and supported less well than it should be".

In order to answer this basic question, he analyzed six studies done on radio forums in India after Poona. They agree overwhelmingly on the finding that radio forums are positive as a strategy for improving the livelihood of the peasants. All the six reports cite notable accomplishments of radio forums in creating (1) interest, (2) learning, and (3) action by villagers.

In summary, the information available from the Poona project and from the other studies carried out in India tends to support the concept that the radio forums are a "potent tool" -- using the words of Schramm and others (1967a) -- for rural development in India and elsewhere.

In 1959, the Indian government decided to try to introduce the forums nationwide and set a goal of at least three forums (called "radio rural forums" rather than "radio farm forums") in each community development block -- one forum for each 200 square miles containing between 60 and 80 thousand persons. Results from the Poona project were summarized and applied in this national effort for radio forums.

By the end of 1959 the radio rural forums had become a national program which was incorporated a short time later in the Third Five-Year Plan. The final goal of 15,000 radio forums was set to be reached by March, 1966.

Each forum consisted of between 12 and 20 members, the majority of them men. Special care was taken to include people from different castes, although this was not always possible. In some villages, success was attained in mixing Harijans (the "untouchable" caste) with non-Harijans. Farmers made up the majority of listeners.

Although the majority of participants were elders, some young people also participated. Established conventions were usually observed, such as the young people not contradicting the views of their elders in their presence.

The chairman was usually chosen from among the elderly, and not necessarily an educated villager. He was usually the sarpanch (village leader) or the school teacher.

The secretary covenor in India's radio forum system is a very important person to the success of the forum. His duties are to set up the meeting place, check on the radio set, seats, lights, and so forth. He is also to publicize in advance the content of the broadcast and the time of the program among the villagers. He keeps records of the weekly activities, such as a list of those in attendance, the discussions, and the conclusions reached. Usually he is an educated man, capable of writing and reading well, and often he is also the secretary of the panchayat (the village council) or the gram sevak (the village-level extension worker) or the teacher of the village.

Weekly or biweekly programs 30 minutes long are broadcast by All-India Radio for the forum audience. The emphasis is on the practical aspects of rural life: health, agriculture, and home improvement topics, intended to stimulate discussion and action among the participants.

While radio is the core medium, it is supplemented by visual aids such as films, pictures, posters, charts, and a fortnightly guide for the farm forum programs. This guide included general background information, program schedules, and specific information to help convenors in guiding the discussions. In summary, while radio is the main channel, the Indian radio forums use a multi-media approach.

An important element in the Indian radio forums are the so-called "district organizers" who are a kind of regional supervisor. They develop the forums and help solve many of their practical problems.

The growth in numbers of radio forums in India has had its ups and downs. In 1965, there were about 12,000 forums enrolling a quarter of a million villagers (Schramm and others, 1967a, p. 53). However, these numbers have fallen off considerably in recent years, evidently in part because many of the members grow tired of the effort required for twice-weekly attendance, especially as the transistor radio revolution has led to each villager having his own radio set. Access to radio, once provided uniquely by the forums, is no longer a motivation for forum attendance.

3.2 Ghana Radio Forums Project

The government of Ghana established a radio forum project in 1964-65 with technical and financial assistance from the External Aid Office of Canada and from UNESCO. Eighty villages were selected, 40 experimental and 40 for control purposes. In the experimental villages, 20 had one forum per village and the other 20 had two forums per village. Each forum had an average of about 20 members.

The main objective was to determine the effectiveness of rural radio forums as a method of educating adults and stimulating village self-help efforts. Every four weeks the participants were provided with a "talkback" program on which forum members asked questions and expressed their views, thus permitting live feedback.

There were 20 half-hour broadcasts, each on a Sunday evening at 6:15 p.m., on such topics as: (1) government economic policy and programs; (2) education and cultural institutions; (3) agricultural marketing; (4) health and family living; and (5) citizenship and community self-help. The radio receivers had a fixed frequency so the villagers could not listen to any other broadcasting station except Radio Ghana.

Overall, the data provided evidence that radio forums are effective for the conditions of rural Ghana and that radio forums are superior to the use of radio alone.

Abell (1968) concluded that the project in Ghana can be considered successful when evaluated in terms of its stated purpose of transmitting information and stimulating rural people toward increased self-help activities.

3.3 Other Research on Radio Forums

A field experiment by Spector and others (1963) among Ecuadorian villagers showed that (1) radio alone was superior in providing

information about poor health and nutritional innovations, (2) radio plus visual materials was superior to radio alone for the purpose of teaching skills (such as how to construct a latrine), and (3) that the multi-media approach, when combined with interpersonal discussion, was superior in achieving the continued use of the innovation and in securing the desired consequences of the innovations.

A series of field experiments in Brazil, Nigeria, and India, in which radio forums were compared with other approaches to providing information for rural development by Rogers and others (1970) and Roy and others (1969) concluded: The efficiency (defined as a ratio of effectiveness to cost) of radio forums in diffusing innovations is much greater than for either (1) literacy-reading classes or (2) community newspapers, whether cost is measured (1) for peasant-receivers or (2) for change agencies. Literacy should be viewed as a long-term developmental investment that is unlikely to pay off in increased knowledge or adoption of innovations in the short-term, such as one year. The community newspapers are essentially a single-medium approach; they do not achieve the effectiveness of a mass medium combined with interpersonal communication (as the media forum does).

A number of other studies on radio forums have been conducted in developing nations, with results generally similar to those reviewed previously in this chapter.

3.4 Radio Listening Group Campaigns in Tanzania

The experience of radio forums in Tanzania is discussed in detail elsewhere in this book by Dodds and Hall. For our purposes here, just the essential structure and philosophy behind the forums will be examined, and implications for use in other contexts will be discussed.

Tanzanian radio forums are unique in many respects from the forums of other countries. The reasons for this uniqueness are the historical/ political framework in which the forums operate, and the actual organizational structure of the forums. Tanzania, like many other former colonies struggling to develop, has had to face the problems of minimal political integration, poverty, illiteracy, and poor health in the setting of a large rural population. What distinguished Tanzania from many other developing countries are the priorities that she has set for herself, and the determined cohesive efforts she has made toward achieving her goals. Three themes predominate in Tanzania: the establishment of democracy within a single-party system, economic development within a framework of rural socialism, and the reform and expansion of the educational systems to suit the requirements of and to contribute to, Tanzania's developing society (Dodds and Hall, 1974). It is with these goals in mind that Tanzania has very consciously adopted the use of radio forums.

From the start of the radio forums in 1969, the use of this multi-media approach was seen as a way to mobilize the population to take an active role in their own political/social/economic development. Nongovernment radio forums existed as early as 1967 (Dodds and Hall, 1974, p. 10). The theme of the first campaign, "To Plan Is To Choose" stressed the choice of rural socialist development and its implications to the people. The second campaign, "The Choice Is Yours" in 1970, had as its subject the importance of political participation among the masses, and was held to create interest and involvement in the 1970 elections. Celebration of a decade of independence and a review of the nation's development was the theme of "Time For Rejoicing" (1971). This was the first national-scale campaign, and the first one on which there is detailed evaluation. The "Man is Health" campaign in 1973 dealt with national health and the "Food Is Life" campaign in 1975 dealt with food production and nutrition.

Each of these campaigns utilized a two-way flow of communication, an educational approach towards knowledge dissemination, and social mechanisms that encouraged group participation in action. In summary, one part of Tanzania's uniqueness in the use of radio forums is the cohesiveness and integration of the way in which the forums are utilized in relation to the overall priorities of the country.

The second characteristic that differentiates Tanzania's radio forums from those of most other countries is its organizational structure. Two main features of this structure are its campaign (program) approach and the lack of a permanent agency to oversee all the campaigns.

The campaign, or program, approach refers to a specific term, single subject-area radio forum. A time frame is set by the agencies planning the campaign so that there exists a definite "beginning-end" time reference for all participants to relate to. This is felt to help concentrate energies and lead to group action. The same thinking is behind choosing a single subject-area--it is thought that by concentrating on one issue intense interest will be created which can lead to mass action.

Tanzania does not have one single agency that has overall control of the organization and implementation of the radio campaigns. Instead, the campaigns involve several ministries. This lack of central control could be potentially counter-productive, but this does not seem to be the case in Tanzania. Usually one ministry will take the lead, and the campaigns to date have been for the most part smoothly organized. Coordinated efforts among agencies, the political party (TANU), and local personnel have so far made the need for a super-agency unnecessary.

The second aspect of Tanzania's uniqueness in the use of radio forums is the organizational structure, which uses the campaign approach and which attempts to avoid counter-productive bureaucracy by avoiding a permanent super-agency of radio forums.

The evaluations by Dodds and Hall (1974), by Hall (1975), and by the Planning and Research Department (1973) indicate that, on the whole, the campaigns have been successful.

1. An atmosphere has been created in which people in rural areas have been able to take control of their own health development, politics, etc.

2. Large numbers of the rural population have been given access to specific and relevant information.

3. The methods offer a realistic alternative to much-criticized "traditional" student-teacher relationships.

4. Cost per participant is low.

5. Grass-roots political structures are strengthened.

There are cautions and potential problems that must be looked at, not only in the Tanzanian case but also in most others. One is the potential danger of a centrally planned campaign that does not allow for a real flow of feedback from the people, and the possibility that the campaign may not be relevant to specific local situations. If feedback did exist, and if the central planning mechanism had the capacity to adjust, this potential pitfall could be avoided.

Another danger can be avoided by strong research preparation for a campaign. This is most important and includes the advance training of personnel at all levels. As Hall (1975) points out, existing structures such as agriculture or community development extension systems can be used, but training in new methods must still be given.

And finally, without good communication and coordination between all groups concerned in a campaign, likelihood of success will be small.

The implication of the Tanzanian case for other countries will have to be looked at in light of each particular country's historical/political context. It can be inferred from the history of radio forum campaigns in Tanzania that if a country has a strong commitment to specified national priorities, and if these priorities are perceived by the broad spectrum of the intended audience to be in their benefit and under their control, then a radio campaign promoting these priorities has a good chance of being successful, given all the other prerequisites for radio forums. In addition, evidence from the Tanzanian case suggests that a programmatic, non-instutionalized approach to organizing the forums may be advantageous over the continuous type of radio forums in achieving group action on specific development problems.

4. EMERGING GUIDELINES ON RADIO FORUMS

On the basis of the extensive experience and research into the role of radio forums in rural development in the nations of Asia, Africa, and Latin America, the following general guidelines have emerged which serve as conclusions for the present chapter.

1. Radio is the single mass media channel that most effectively reaches the widest audience of villagers at present.

2. It is possible to produce radio programming about development topics that is attention-getting and interesting to village audiences--if it is planned carefully to meet villagers' needs, if it is presented in an appropriate message format (such as in the preferred language and the traditional/folk artistic and cultural forms, etc.), and if a variety of production styles (for example, dialogue, dramatization, popular music, and narration) are utilized.

3. Radio alone as a medium of conveying development messages should be supplemented by other media such as listening guides, workbooks, simple booklets, and various audio-visual materials--a multi-media approach usually will out-perform any single channel.

4. Radio has a special advantage for maximizing audience segmentation strategies in that particular radio programming can be beamed at a special village audience in the appropriate language, at a convenient time of day for listening, using an attention-getting format, and utilizing localized message content.

5. Special abilities are required on the part of radio producers to reach rural audiences effectively, in that they must be knowledgeable about and trained to recognize villagers' information needs, appropriate vocabulary, speed of comprehension, and concept formation, as well as have subject-matter expertise (for example, agriculture, health, etc.).

6. Development communication should be viewed as a total process that includes understanding the village audience and needs, communication planning around selected strategies, message production, dissemination, reception in listening groups, and feedback, rather than just as a one-way direct communicator-to passive-receiver activity.

7. Greater communication effectiveness can be achieved when a relatively small number of high-priority campaign themes are carefully selected and implemented in an integrated and coordinated fashion.

8. The effectiveness of a development campaign through radio and supplementary media is maximized when some type of listening group or forum is organized at the receiver end of the communication process.

9. Radio forums seem to be effective with illiterate audiences as well as literates.

10. One of the important functions of forums is to provide feedback to program producers regarding the usefulness of the media messages, the style of message presentation, the utility of supplementary materials, and the logistic limitations to action (that is, adoption of the innovations featured in the messages).

11. Listening/discussing forums are important in converting the members' knowledge into action through discussion and exchanges of experience; the objective of the groups is to achieve behavior change on the part of the villagers, such as adopting agricultural innovations, building latrines, getting innoculations, using family planning methods, etc.

12. A variety of low-cost means are available for identifying, organizing, and maintaining radio forums. For example, (1) identifying existing leadership and "natural groups" in villages that can be converted to listening/discussing forums (with the provision of adequate incentives), (2) training and motivating in-place government employees like school teachers, agricultural extension workers, and family planning field workers to organize forums, and (3) using radio to urge people to form listening groups, as well as employing full or part-time organizers.

13. Forums can be organized and maintained for time periods of different duration, depending on the nature of the campaign theme being presented. For instance, a grow-more-wheat campaign might utilize listening groups for a series of four once-a-week meetings to be timed just prior to the planting seasons, while other forum systems are organized on a "permanent" basis to receive and discuss a weekly series of radio programs on a wide variety of development topics. In any event, radio

forums, once organized, will not last forever; probably a forum should be expected to disband after one or two years of operation.

14. Radio forums are more effective if each group has a leader with minimum training in how to lead group discussion and how to use the supplementary print materials properly.

15. Forums should be relatively small in size, with from 10 to 20 members, so that each individual has an opportunity for participation and so that travel to the forum meeting place is convenient.

16. The concept of forums is highly compatible with villagers' experiences and cultural preferences. However, radio reception by a small, informal group of friends was more common in the recent past than it is now, as the ownership of radio sets by individual villagers has become more widespread.

17. A campaign approach to radio listening groups may be advantageous over institutionalized radio forums (1) when everyone has individual access to the medium (of radio), (2) when segmentation of audience and content is especially appropriate.

18. Caution must be exercised that a radio forum system does not inform and motivate the village audience to undertake behavior changes that are then blocked by the unavailability of development inputs (like fertilizers, medicines, etc.), leading to widespread frustration. Possible ways to minimize this problem is to select forum campaign themes carefully so that they involve more readily available inputs, to coordinate the campaign with relevant government and private agencies that are expected to provide the inputs, and to use the forum system's feedback devices to identify input bottlenecks at an early stage.

19. Thus a radio forum system is not only a way to change the behavior of villagers, but also a means of changing government institutions in directions that better serve villagers' needs.

REFERENCE NOTE

1. The knowledge scores were computed for each respondent on the basis of his answers to six sets of related questions, each of which was scored on a three-point level of correctness. One of the typical question sets was: "What damage do rats do? Do rats carry disease? If yes, what disease? What do you do against rats? When you kill rats, what do you do with the bodies?"

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PART FOUR

RADIO FOR DEVELOPMENT COMMUNICATIONS

CHAPTER XII

COMMUNITY USE OF RADIO IN THE CANADIAN NORTH

Heather E. Hudson

1. INTRODUCTION

The North of Canada beyond reliable communication and transportation services is an area as large as Western Europe, but with only 250,000 inhabitants. Native people (Indians and Eskimos or Inuit 1/) in this vast territory number about 150,000. Most live in villages accessible only by boat or plane. Living in an isolated and very harsh environment (temperatures frequently drop to -40° C in winter), Northerners are very much aware of the importance of communication.

In recent years, native people in the North have recognized the importance of communication as an organizational tool. Broadcast radio can be used to communicate with people in their own language to increase their knowledge of the world outside their own community, and to build an awareness of a shared identity and common problems. Two-way communication can be used to organize meetings, plan political strategies, and keep leaders in touch with each other and the outside world.

There were many efforts to ascertain the communication requirements of the North in the past few years (e.g., Report on the Yellowknife Conference, 1970: Arctic Institute of North America, 1971). All Northerners stressed the need for better two-way communication, and native people emphasized two-way links between northern communities as the highest priority. They also requested broadcasting service, including content about the North in native languages.

The requirement, simply stated, was for a basic telecommunication infrastructure in the North, turning the remote villages into nodes of a communication network. With unusual perception, native leaders from these remote regions saw communication as a key to their social, political, and economic development.

In an effort to respond to these needs, the Canadian Department of Communications sponsored the Northern Pilot Project (NPP). Its approach was a novel one for a government department because it was designed to involve the people in selected remote areas in the planning, operation, and evaluation of their own communication systems.

The project ran from 1972 to 1974. It provided a range of media meant to be suitable for meeting the communication needs of

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residents in two selected areas: Indians in Northwestern Ontario and Inuit in the District of Keewatin, Northwest Territories. However, the project extended beyond the provision of communication hardware. Its philosophy was rooted in the assumption that the provision of communication facilties is in fact part of the development process, and therefore the facilities cannot be expected to meet people's need effectively unless the people are involved in the planning process and in the ongoing operation of the services.

1.1 Equipment

The technologies chosen to meet the expressed communication needs were:

> High frequency two-way radios for communication among isolated communities and for communication between hunters on the traplines and their home communities;
>
> FM radio broadcasting stations for communication within communities;
>
> Portable videotape units for use within communities and for exchange of tapes between communities. 2/

1.2 Organization

Project staff included a manager, two field workers (one for each region) and an evaluator. The manager and evaluator were based in Ottawa, while the field workers lived in their respective regions.

The Department of Communications, Communications Research Center, provided technical assistance. Resource people from the National Film Board and the Canadian Broadcasting Corporation helped with equipment selection and training of native participants.

Representatives from the above agencies and from government departments serving the two remote regions acted as an advisory committee to the project.

1.3 The Approach

Communication media do not function in isolation, but must be intergrated into the users' environment. Two of the key elements in the philosophy of the project were control by the users and participation by the users, in all aspects of the project.

Responsibility for operationalizing this philosophy lay with the project field workers. Two field workers were involved in this project; one worked with the Inuit in the Arctic and the other with the Indians in Northern Ontario. They were chosen by the Department of

Communications because of their rapport with native people, familiarity with media, and willingness to work in remote areas.

These field workers consulted with native representatives to determine their most pressing communication needs. They used a community development approach by working with the native people to involve them in project planning and implementation.

2. THE NORTHERN PILOT PROJECT

2.1 The Environment

The two regions selected for the NPP were the Central Arctic Keewatin District of the Northwest Territories (NWT) to the west of Hudson Bay and Northwestern Ontario in between the Great Lakes and Hudson Bay. Both are sparsely populated by native people who were traditionally nomadic, but now live in communities of approximately one hundred to eight hundred people.

The rapid transition from living off the land or sea to living in prefabricated houses in permanent settlements with a largely wage-based economy has had a profound effect on the traditional culture of the Inuit. Vallee points out the abruptness of the transition:

> To put this feature of cultural discontinuity in perspective, let us imagine that in Canada, between the 1930s and 1950s, there had occurred a mass conversion from Euro-Canadian literacy and musical traditions to those of the Chinese. The adoption of Kabloona (white) religion and expressive patterns among the Eskimos involve a break with tradition of almost the same magnitude (Vallee, 1962, p. 28)

The rapidity of social and cultural change is most striking in the Keewatin. The Inuit were nomadic hunters who travelled as extended families or small family groups. The primary focus of their existence was survival in one of the harshest environments in the world. Government contact has been recent and all-pervasive. Twenty years ago (and less, in some cases), people lived in igloos and tents on the land. Now they have been moved into government-constructed settlements where houses, a school, and a clinic have been provided.

2.2 The Project in Community Radio

Community Radio

There is no textbook definition of "community radio." Basically, a community radio station is a non-profit broadcasting operation

dedicated to providing programming specifically for residents of a designated community (geographical, cultural, linguistic, etc.). However, forms of station ownership, operational structure, funding, and programming may vary widely.

One Indian and one Inuit settlement were selected to receive assistance in starting small community radio stations. Residents in both settlements had expressed interest in using radio for local entertainment and information. The project in the Inuit settlement of Baker Lake is outlined below.

The Community of Baker Lake

Baker Lake is a settlement of about 700 Inuit and 100 Kabloona (whites), in the heart of the Arctic tundra called the Barren Lands, about 400 miles north of the nearest town, Churchill, Manitoba.

The site began as a trading post, to which were added a mission and a government weather station. Today, the settlement consists of several rows of pastel-painted prefabricated houses parallel to the lakeshore. A modern school that offers kindergarten to grade eight dominates the settlement. Other professional positions, such as teaching, nursing, administration, store management, and weather station operation are held by whites. There are Inuit ministers, teaching aides, council representatives, and clerks.

Most people over thirty are unilingual, but younger people who have been to school are fluent in both Inuktitut and English (education is primarily in English). Adults who have never been to school are literate in syllabic script introduced by the missionaries for translating the Bible. Syllabics are now taught in school along with the Roman alphabet.

Hunting, fishing, and trapping supply some food, but make only a minor contribution to the income of the people. In addition to the usual store and government jobs required to operate and maintain facilities in the settlement, the cooperative arts and crafts shop employs several artists and artisans in the production of soapstone carvings, prints, clothing, and tapestries. However, the settlement has no viable economic base.

Scheduled air service is provided three times per week, weather permitting. People use snowmobiles to travel on the land and ice much of the year, and boats for fishing during the short summer.

Baker Lake has a local telephone exchange. A satellite ground station for telephone communication began operation in 1974. However, its links are primarily to the south, and calls to most other Northern settlements must go by radio-telephone.

Prior to installation of the radio station, the only broadcasting service provided for the area was the CBC Northern Service on short wave, which was often difficult to receive with even a fairly expensive multiband receiver.

2.3 Establishment of the Radio Stations

Preparation

The method of establishing the radio stations was probably the most significant decision of the NPP endeavor. Preliminary investigations indicated that remote communities had particular difficulty in establishing radio stations because they lacked expertise and because resource people were not readily available. Licensing was a major hurdle for a community that could not interpret the application forms and did not have the expertise necessary to meet the reuirements. Also, it appeared that to develop programming that extended beyond simply playing records and making announcements, training in news-gathering and public affairs programming was required.

The field worker was to work with the residents on all these problems.

Licensing

An important question was how to insure that a radio station was controlled by the community and represented the interests of the various sub-groups within it. It was decided that the license should be held by an organization that would be responsible for running the station and would reflect the opinions of the community. A group of local citizens interested in starting a radio station had already formed a committee. This committee was enlarged and incorporated as a non-profit society under the law of the Northwest Territories. This body, called Quamanituap Naalautaa (QN), meaning Baker Lake radio, then applied for a license on behalf of the community to the Canadian Radio-Television Communication (CRTC). After the station went on the air, memberships were solicited, and the appointed board of directors resigned to make way for a board elected by the members.

Responsibility for Operation

The board of directors of the radio society was responsible for setting the general direction of the station, responding to suggestions and complaints, and administering funds. Day to day programming decisions were made by the station manager, who reported to the board.

Training

The field worker trained a young bilingual man chosen to be station manager by the radio society. By the time the station was

scheduled to go on the air, the trainee was expected to know how to schedule programs, gather material, produce programs, and manage the station operation. He received training in the preparation of the license application and represented the community at the licensing hearing. Additional part time staff were trained, and school students learned to produce a noon-hour show.

Operation

The station was run by the manager with the help of trained part-time assistants. Other residents operated on a part-time volunteer basis, and were trained by the manager. Volunteers who prepared programs included school students, weather station personnel, the industrial development officer, the social development officer, and the nurses.

Equipment

The radio station equipment was purchased and installed by the Canadian Department of Communications.

The equipment consisted of a 100-watt FM transmitter and studio facilities, including mixing console, microphones, turntables, and tape recorders. Total capital cost for this off-the-shelf equipment was approximately $5,000 for the FM transmitter and $15,000 for the studio package. 3/

Financing

The stations were supported for eighteen months by the Department of Communications (DOC). By this time, they were to have found their own sources of funding. The mechanism for providing the support was a contact between the settlement council (local government) and the DOC. This mechanism was introduced to insure that there was no direct link between the government and the station itself. The council had the power to administer funds to the radio society, and it was the council's responsibility to deal with the government.

Programming

The ratio station, which was licensed under the call letters CKQN, began broadcasting four hours per day. The schedule combined local news and announcements, local features, and recorded music. CBC taped programs, mostly in Inuktitut, were also aired. CBC news was sometimes recorded from short wave and rebroadcast.

Community programs included local news, religious programs by various denominations in the community, programs about social services, and special features such as a school program, coverage of the settlement council election, a phone-in show, and songs by Inuit singers.

CKQN Content

About 25% of the programming was spoken word, the remainder being recorded music with occasional live local music. About 90% of the programming was produced locally. The balance included CBC tapes, generally about Inuit affairs in Inuktitut, and a few more of interest to whites.

If one counts the lyrics of all the records, then the content was predominantly English. However, all local news, announcements, and messages were done in both languages, and some programs on community affairs were only in Inuktitut. To get a meaningful estimate of the content in Inuktitut, it makes more sense to consider the spoken word programming only. The station began with about 60% of the spoken content in Inuktitut, and increased this to over 80% in the first year.

The station provided coverage for local events such as the settlement council elections. The candidates were given a chance to speak on the air during the week prior to the election, and residents were reminded of the election during the day until the polls closed. The first live "remote broadcast" covered the results of the election from the polling station in the community hall where the election was held, some 10 feet away. Several people thought that the large turnout, which was significantly greater than on previous occasions, was at least partially due to the radio station's coverage.

In another local program, the industrial development officer offered a series of programs on credit unions twice per week in the spring, in preparation for the establishment of a credit union in Baker Lake. A social development program was hostessed by the Inuit social development officer who gave information about various job opportunities and training programs. She discussed local issues and the visits of outsiders to the community. Her programs were primarily in Inuktitut. Inuit singer Charlie Panagoniak spent a week in Baker Lake during which he performed live on the radio several times. His songs were recorded for future play. By the end of the week many people knew the words to his songs, primarily because of the radio broadcasts.

CKQN in Baker Lake: Results of Two Surveys

In November 1973, a questionnaire was adminsitered to forty students in the two senior classes (grades seven and eight) of the Baker Lake School. Interviews were also conducted with a sample of twenty-one Inuit and eleven Kabloona heads of households. 4/ These are among the findings.

Radio Usage. Most of the people in Baker Lake listened to CKQN virtually all the time it broadcast. Thirty-nine of the forty students, all twenty-one Inuit heads of households, and ten of the

eleven Kabloona listened to CKQN an average of almost four hours per day. The students generally understood programs in Inuktitut and English, but their parents understood only programs in Inuktitut. All of the Kabloona interviewed understood only English. So, listening to the radio should be interpreted as "having the radio turned on" since many people could not understand programs in other than their native language.

Program preferences. Among the students, the most popular types of programs were recorded music and news, and announcements about Baker Lake. Other popular choices were programs about the North and Inuit stories and legends.

New programs. Most students, adult Inuit, and Kabloona agreed that any additional programs should be in both languages, whether they understood both or not. Several others thought new programs should be in Inuktitut only.

Among the suggestions for programs from students and heads of households were: Inuit stories and legends, religious programs, various kinds of recorded music, Inuit songs, local news and announcements, and news from other parts of the North.

Participation. A sizeable number of people in the community had already participated in making programs or going on the air, and many others indicated an interest in doing so. Several mentioned that they would like more people from the community to be involved in the station.

Effects of CKQN

Generally the radio station seemed to have increased the awareness of activities and events going on in Baker Lake for both Inuit and Kabloona. For Inuit, it had also become the chief information source about the Keewatin and other parts of the North, and, to some extent, about the rest of the country (the South). In contrast, the Kabloona relied mostly on newspapers and magazines for their knowledge about the North and the South, and were oriented primarily toward the South.

Information about the community. The radio station had become the chief source of information about news and activities in the community. Sixteen of the twenty-one Inuit interviewed and ten of the eleven Kabloona said that they got news about Baker Lake from CKQN. In the previous year when there was no radio station, both groups relied on word-of-mouth or the "general call," a phone chain in which each person in turn phoned the next person on the list. Many commented that they now knew much more about what was going on in the community. This seemed to be particularly true for the isolated Kabloona--wives who stayed at home and families living in the weather station compound at the end of the community.

Information about the Keewatin. The radio station had also become the chief source of information about the Keewatin region for Inuit residents, and appeared to have increased their knowledge levels about regional events. It was little used by Kabloona, who relied more on printed material and personal communication. Their sources of information had remained basically the same.

Sixteen of the twenty-one Inuit said that they found out about what was happening in the Keewatin from CKQN. Six said that in the previous year they had obtained information by reading a monthly newspaper in syllabics and English. Three had heard from talking to other people. But four said that before the radio station they had received no news of the Keewatin at all.

Information about the North. The radio station had also become the main source of information about the North for Inuit residents and appeared to have increased their knowledge levels about the North. Kabloona continued to rely primarily on periodicals, and some got little news at all.

Thirteen of the twenty-one Inuit said they got news about other parts of the North from CKQN. Four mentioned CKQN and four mentioned hearing from other people, including students who had been away at school. Four said that in the previous year they heard from other people or from visiting other places, and two mentioned newspapers. Five said they had previously received no news about the rest of the North at all.

Six of the eleven Kabloona said they got news about the rest of the North from newspapers and magazines. Four also mentioned CKQN as a news source. But four said they got no news about the rest of the North at all.

Information about the South. Some Inuit got news about the rest of Canada from the radio station, but many knew little about the "South."

Seven of the twenty-one Inuit mentioned CKQN as their primary source of news about the South, and five mentioned periodicals. Four said they heard news from other people, including government officials, or at meetings. But five said they got no news about the South at all.

The Kabloona were better informed and relied on newspapers, magazines, and radio broadcasts from the South (either AM or shortwave).

As an example of news diffusion before the radio station was introduced, people were asked how they found out about the results of the 1972 federal election. The responses indicated that the Kabloona were far better and more quickly informed than the Inuit. The nine

Kabloona who had been in the settlement had heard the results by listening to distant radio stations, reading the government radio teletype reports, or talking to others in the community with shortwave radios.

Six Inuit had head results from others in the community, most of whom had shortwave radios. Three heard from government officials and two from listening to distant AM stations. But eight of the twenty-one still had no idea of the results (the name of either the party in power, or the Prime Minister, or their member of Parliament).

The Role of the Fieldworkers

The fieldworker played many roles in helping to start the radio station. The tasks included: building of credibility; designing of an efficient system of informing the general public about the role of the radio station; training of the staff; meeting with the various locally-elected bodies to enable adequate preparation for the necessary documents; physical preparation of the antenna site and studio building; continued availability as a resource person; and, eventually, withdrawal.

Building of credibility. When asked about his role as perceived by Baker Lake residents, the fieldworker replied that in Baker Lake he was known by Inuktitut words meaning "grandfather," "guy with a beard," and "radio man." Thus, personality, appearance, and function were noted by various individuals, none of whom, it is safe to say, thought of him as a social animator. To them, his function was to help get the radio station going.

The first task for the fieldworker was to familiarize himself with the community and to build his own credibility among the people. He moved to Baker Lake with his family and secured a home in the Inuit part of the village, at the opposite end from "Decision Row," as he called the section comprised of the offices and homes of the settlement administrators. He felt that both these factors--the presence of his family and his house, which was similar to Inuit housing and in the Inuit village--were important in building rapport with the community.

He began by making a point of talking to people, meeting with elected bodies, being present at community functions, and visiting. He explained the visiting habits of Baker Lake residents:

> ... It takes time, patience, and understanding to recognize that among Eskimo people silence is a very important communications tool. One must visit many homes without ceremony, drink tea or coffee, use what few words one may know without fear of embarrasment, sit in silent contemplation (for they, too, will do that even when they speak the language), and then be prepared to leave withot fuss or ceremony -- and frequently without the need to even say 'good-bye'. In addition, one hopes that these

> good people themselves will start to drop in and visit -- which fortunately they did, with increasing frequency and at the strangest times ... Sometimes they won't talk at all, but will merely knock and come in (all in one motion), sit down, and stare out the window, or at the wall, and after half an hour leave without really saying anything. Sometimes the total communication can be by the eyes -- this sounds remarkable but it is true, the Eskimos being past masters of the art of face-to-face communication (Gardiner, 1972).

As this process of building trust and channels of communication went on at a person-to-person level, it was also possible to introduce information about the radio station.

Building awareness of the radio station. Several techniques were used to increase awareness of the radio station and its potential in Baker Lake.

Videotape. The station manager and a friend used a portable videotape unit provided by the Department of Communications to explain the radio station and to gather the opinions of local residents on what kinds of programming it should produce. These tapes were shown back to the interviewees to give them the opportunity to make changes and give their approval before public viewing was permitted. An edited version of several segments was then shown at various meetings and in gathering places such as the Hudson's Bay Store and a women's sewing group. Also, the fieldworker and an assistant acting as interpreter went from door to door to show the tape. He elaborated:

> The impact of this method had to be seen to be believed, and it is almost certain that the very concept of 'this strange man who arrived with a TV program' would be discussed for a time afterwards, thus achieving the very thing I was seeking--increasing the information flow in a small community and causing discussion. (Gardiner, 1972)

Audio presentation. When the station manager had acquired enough skill to prepare a program, he made a tape of a "dummy program" to illustrate what the station would sound like. Several cassette copies were made of this tape and distributed around the community. (Many families have cheap cassette recorders.) The fieldworker commented on the effects of this "auditory sensitization":

> The results of this were remarkable, as the tape was shown to have some very positive effects catalyzing the residents of the community. Up to the time they heard the audio tape, the whole concept of the radio

station had been nothing more than talk. The tape made it a real situation that they were more able to grasp. (Gardiner, 1972)

Preparation of documents. The fieldworker became an administrative coordinator for the documentation required in the license application. He was charged with explaining the forms to the radio committee and coordinating efforts to obtain the required information. In addition, the fieldworkers explained the licensing process to residents who represented the community at the CRTC hearings.

Preparation of the site and studio. In Baker Lake, the fieldworker functioned as an animator in this task which included the purchase of a building, and later the erection of the antenna towers and antenna. He acted as a resource person for the radio society's decisions and ensured that people were mobilized to obtain the equipment and to perform the labor required. He used this procedure as a training process for the station manager by delegating to him much of the responsibility for getting the tasks done.

Training. The CBC provided training assistance, but the major burden of transferring skills of radio operations and production fell to the fieldworker.

The fieldworker in Baker Lake saw his main task as teaching the station manager to put together a "total package," that is, to produce programs and select programs which together would fulfill the functions of the station. Skills included scheduling programs, gathering material, producing programs, and training other residents.

Withdrawal. The last task of the fieldworkers was to ensure that the residents were adequately prepared to continue operation of the station on their own. They acted in a resource capacity only, helping with production or administrative problems as required. This, then, from the point of view of the fieldworkers, was the "withdrawal phase."

2.4 Inter-Community Two-way Communication

Another chapter of this volume discusses the use of two-way radio communication by satellite for health-care delivery in Alaska. This section examines public use and control of a two-way communications system in Northern Canada and the developmental significance of the system.

Staff of the Northern Pilot Project sponsored by the Canadian Department of Communications also worked with the Indian people of Northwestern Ontario to establish a radio-telephone system linking twenty-four communities.

The Setting

Remote Northwestern Ontario is a vast undeveloped region of lakes and forest north and west of Lake Superior. Cree and Ojibway Indian people live in an area of about 160,000 square miles between the Canadian National Railway (CNR) line and Hudson Bay. The native population is about 7,800, grouped in some twenty-five communities with populations ranging from 70 to 1,000. The native communities scattered over this vast area are generally composed of a few hundred people living in log cabins or simple frame houses heated with wood stoves. There is usually no electricity, running water, or sewage system for native residents.

Each community is likely to have a school, one or more churches, a store, and a nursing station or a clinic staffed by a community aide. The school and nursing station have electricity and running water, as do houses provided by the government for its employees. Whites hold virtually all professional jobs. Several of the larger communities have local telephone exchanges, even though the houses may have no electricity.

The major supply and administration center for the area is Sioux Lookout, a town of about 2,800 on the railway line.

Transportation and Communication

Transportation is by plane to all communities in the area, except the few in the southern sector that are served by roads. Larger communities may have several regular scheduled flights a week; others may have none unless they finance a charter. Few communities have air strips. In other places, the planes must land on the water or on ice. For a period of two to six weeks in spring and fall, termed break-up and freeze-up, planes are not able to land at all. Mail and freight are transported by plane. Air freight rates are extremely high. In winter, tractor trains haul freight overland and across frozen lakes to the interior settlements.

Communication between settlements is by high-frequency radiotelephone. Public service is provided by the common carrier. Several dedicated radio systems for use by government agencies, churches, and air services also operate in the region.

Political Structure

In the 19th and early 20th century, most of Canada's Indian people signed treaties with the Canadian government. In return for ceding land, they were given areas for their exclusive use known as reserves. The people of each reserve are known as a band. They administer their affairs through an elected council composed of a chief and councillors.

Reporting on communication in Northwestern Ontario, Pace found it useful to divide the communities into two categories: reserves and satellites of reserves, i.e., separate communities composed of band members, but not on reserve land (Pace, 1971). The reserves have been the center of activity for the other settlements. This organizational structure was important to the communication needs of the area. The satellites sent representatives to the band council meetings on the reserve, and the councillors in these communities had to keep in contact with the chief. Communication was extremely difficult because of the unreliability of radio and mail service. 5/

Pace points out that without a reliable and accessible communication system, leaders had difficulty in communication with each other enough to gain a shared understanding and approach that could then be presented to outsiders.

The Most Remote Community: Fort Severn

This village of approximately two hundred Cree Indians is located at the mouth of the Severn River just upstream from Hudson Bay. The people hunt and trap on the flatlands along the Bay, but do not hunt sea mammals on the Bay as do the Inuit farther north. There has been a settlement near the present site of Fort Severn for several hundred years. The Hudson's Bay Company established a post at Fort Severn in the 1680s. This post used to be the headquarters for the region, with supplies brought by ship and then by canoe up the Severn River to the various outposts. With the advent of the airplane, mail and supplies were flown in from the South, and Fort Severn became a remote outpost.

Although the Fort Severn people have kin ties with other communities around Hudson Bay, they are now politically part of the inland region to the south, and their organizational ties must be with that region. Yet the communication service allowed for only one-way messages, over very circuitous routes. For the chief to send a message to the chief in Big Trout Lake two hundred miles to the south, he had to send a telegram via the Hudson's Bay Company to Moosenee on James Bay. The message was then telegraphed south and west along the railway, and radioed back to Big Trout Lake--a distance of over 1,100 miles.

The Requirement for Two-way Communication in Northwestern Ontario

Reports and conferences over the three years prior to the establishment of the NPP had repeatedly emphasized the requirement for two-way communication as the top communication priority to remote areas. In Northwestern Ontario, there was ample evidence that this priority was clearly recognized by the native leaders.

The requirement for two-way communication was explained by the chiefs and councils interviewed in three communities. In each case, they cited the first priority as consultation with chiefs on the other

reserves. The second priority was for personal communication between friends and relatives in the various settlements or with those away at school or hospital.

The consistency of the answers in the three locations was an indication of the serious long-term considerations of the need for improved communication and its impact on the political process. Although the chiefs were quite isolated from each other, they spoke as one. And although the matter had been discussed at previous meetings, there was no opportunity for immediate consultation without the benefit of the very radio system they were discussing.

In 1971, the chiefs of the region were planning a Friendship Center (a native community center) in the town of Sioux Lookout. The building was to be more than a meeting place and cultural center; it was to be a viable communications center with facilities to communicate with the remote communities in the region.

The board of directors of this center, which included the chiefs, emerged as spokesmen for the communication needs of the area. The fieldworker consulted them for prioritization of sites, contact with communities, arrangements for training courses, and general advice on the approach and pace of the project.

Equipment

Basic equipment for the HF network included a single sideband radio transceiver, power supply, and antenna system for each site. Each radio had four channels: two frequencies for daytime and two frequencies for night-time use. The power supply for a village unit consisted of a 12-volt automobile battery, battery charger, and portable gasoline-run generator. the generator was used to recharge the battery.

The capital cost for a village site, including radio, power supply, antenna system, guy wires for poles, basic tools, etc. was approximately $2,200. Freight charges were extra. Capital and installation costs for the original sites were borne by the Department of Communications.

The base station for the network was located in the Sioux Lookout Friendship Center. As the number of sites increased, larger villages were designated as sub-base stations to handle the radio traffic in their area.

Installation

During the summer of 1972, radios were installed in six communities chosen by the board. Each community was to help by cutting trees for antenna poles, finding a building where the radio could be located, providing people to help with the installation, and choosing two people to be trained as radio operators.

During the next year and a half, additional funds from the DOC and the Ontario government made it possible to install more radios so that all twenty-four communities in the region were eventually linked. A native installation crew took responsibility for the installation of these additional radios. They were three young Indians from the area who started as assistants to a DOC technician and soon took over the field installation. Training courses were held for the operators chosen by the communities. The operators later passed on these skills to others in their communities.

Uses and Effects of the Radio-Telephone Network

Analysis of the functions of the network and the effects of access to radio communication were derived by combining radio log data and monitoring reports, results of a survey of sample households in two villages, 6/ interviews with chiefs and councillors, and comments made by Friendship Center staff, fieldworkers, government officials, and others working in the area.

Traffic on the system. The radios are in use all day long, and sometimes in the evening as well. The base station at Sioux Lookout handled the highest number of calls. During the month of March, 1973, the operators at Sioux Lookout recorded 542 completed calls, or about 25 calls for each day they were on the air.

Message content. The following is a breakdown of traffic content for the base station at Sioux Lookout during March, 1973 and for Weagamow, a remote reserve community, during May, 1973.

RADIO TELEPHONE MESSAGE CONTENT

Content Categories	Base Station: Sioux Lookout (March 1-31, 1973)	Village: Weagamow (May 1-29, 1973)
Aircraft or mail	9.6%	5.9%
Band council or Friendship Center business	17.7	27.1
Government department or official business	19.3	7.6
Hospital	4.4	5.1
Personal Affairs	18.5	34.8
Radio	26.3	5.1
Weather	4.2	11.9
Unknown	0	2.5
	100.0%	100.0%

Personal messages. The person who lived in a remote settlement was most likely to use the radio to contact friends and relatives in other Northern communities. This was one of the main requirements identified by the leaders before the radio network was installed.

Band Council and Friendship center business. This category encompassed native affairs in Northwestern Ontario, and was the type of communication stressed by the leaders as important to the area's development. It could be broken down into three sub-categories:

— Communication about regional native affairs, generally coordinated through Sioux Lookout.

— Communication among chiefs on the various reserves about their activities and plans for the area.

— Communication between chief and the councillors located in the satellite communities on his reserve.

The party-line function of the HF network was used for conferences among the chiefs to plan meetings or outline common goals and strategies for the region.

Government department or official business. This category refers to calls made concerning government affairs in the region or concerning other institutions such as colleges that offer adult education courses in the communities. The calls were often initiated from communities requesting specific information from the goverment departments and agencies serving the area, many of which have district offices in Sioux Lookout. The Friendship Center found the required information and relayed it back to the communities.

Chiefs could also receive word about successful applications for funds by radio rather than waiting for written confirmation. And they could file administrative reports, such as timesheets, by radio so that cheques could be forwarded to the employees. The radio could also be used for more political purposes, such as requesting assistance from federal or provincial representatives, or reminding an elected member of a promise of assistance. And, rather than write a letter, a chief could ask to speak to a specific official in Sioux Lookout to clarify an agreement.

Aircraft or mail. People in the Northern communities found the radios useful to check with locations where planes were based to find out whether aircraft were flying. They could also order charters or request over the radio that flights stop to pick up passengers.

Weather. Weather and flying are closely related. The people in the communities know that air service depends on weather conditions, and used the radios to inform Sioux Lookout or other air bases of the weather conditions. The pilots in the North also used this facility to check weather conditions.

Hospital. The Sioux Lookout Zone Hospital serves most of the population in the radio network area. The radios were used to allow people staying in Sioux Lookout to talk to their friends and relatives in the communities. People in the North could also call the Friendship Center to inquire about the status of a patient. The Center then checked with the hospital and relayed the message. The radio network was also used as a backup for the National Health and Welfare (NHW) system linking nurses and community aides to the hospital.

Radio. This category refers to messages about the radio system such as signing on or off the air, testing signal strength, requesting spare parts, reporting problems with the radio system, setting up schedules, or arranging conference calls.

Who used the HF Network?

The following are among the people who used the radio system:

-- The leaders of the area: chiefs, councillors, and the officials in native organizations to contact each other and Sioux Lookout.

-- Indian band council managers to contact each other and Sioux Lookout.

-- Residents of the remote communities.

-- Students in school in Sioux Lookout.

-- Government representatives: administrators concerned with organizing and running programs in the North.

-- College representatives: to coordinate and administer adult education courses.

-- Community development workers for goverment agencies and native organizations.

-- Airlines to check on weather conditions and arrange pickups.

-- Health workers: occassionaly as a backup, and to pass on word about patients.

-- The staff of the Friendship Center to coordinate regional activities and pass messages.

Of twenty heads of households out of the thirty-five interviewed in the two villages, eleven (55%) reported that they had used a

radio-telephone. The radio users were predominantly men, but varied widely in age. They tended to fall into two usage categories: those who used the radios more than once a week, and those who used it a few times per year. The frequent callers tended to use the radio in their work (band administrator, chief, radio operator), whereas the majority were interested only in personal communication. Most used the radio primarily to contact other Northern communities.

What Language was used on the Radio Network?

"Indian" appears to be the first language used by people in the Northern communities on the radio. Nine of the eleven heads of households who reported using HF radios in Weagamow, and seven of the nine in Fort Severn, said that they usually used the Indian language on the radio.

A DOC monitoring station kept track of the calls made in Indian during the monitoring period from March 26 to April 25, 1973. The Indian language was used in 58 contacts during this period, or 10.2% of the total completed contacts.

However, calls in the Indian language were, on the average, more than twice as long as calls in English, and accounted for slightly more than 20% of the traffic time. This figure was much lower than was indicated by individual users because most of the routine calls and requests for information from Sioux Lookout were in English.

An Information Retrieval System for Northern Communities

A remote community could ask via radio for a message to be passed or for specific information. The operator in Sioux Lookout would then phone a local Ontario government office which would send out a telex and notify the operator of the reply. The required information was then transmitted back to the community by radio.

For example, chiefs wanted to contact provincial government officials in Toronto. The manager of the co-op store in a new community with no commercial radio service called to order a load of groceries, a pair of baby shoes, and two boxes of nails to be sent on the next plane. A worried father called several times to inquire about his new-born infant in a distant hospital. And an urgent message came from a minister asking for parental consent for the marriage of a young woman. The message was relayed by radio, and the reply was that the family had gone out on the trap-line and no one knew when they were expected back.

Effects of Radio-Telephone Use

The greatest impact of this new information channel may have been in Fort Severn, the most remote community. In August, 1973, after

using the radio system for a year, the chief of Fort Severn said that he now heard about meetings he missed before, and he was able to get better service for his people. He chose the example of a request for information from a provincial government department in Toronto. "Now," he said," I can get answers from Toronto in one day. Sometimes in ten minutes." The chief believed that the community in general had benefitted from the improvement in administrative efficiency resulting from radio use.

Flow of information. The survey carried out in Weagow and Fort Severn examined the channels of communication used by residents to gain various kinds of information, and the use of radio telephones in particular. Generally, the flow of information within the North and from the outside had increased since the radios were installed.

Effects of increased information flow. What were the effects of this increase in flow of information? Regional Development workers said that communication was helping to create an awareness of shared needs and problems. Many effects were noted by the leaders themselves. They included an increased awareness of regional activities, greater efficiency in their work, and a growing ability of the region to "speak with one voice".

Awareness and Action. The band manager in Weagamow noted that he was able to get government information quickly from Sioux Lookout and was also able to arrange visits of government officials by radio. A native spokesman felt that the people were getting better service from government agencies as a result. Departments could no longer ignore requests when the communities could contact their officials directly.

The chiefs noted that communication could be substituted for transportation to increase their efficiency. The chief of the Trout Lake band stated that he now rarely had to visit one of the satellite communities on his reserve which was part of the original network. He could keep in touch by talking with the councillor there over the radio. The chief felt that this ability to rely on communication rather than transportation had substantially reduced his work load.

The improvement in communication appeared to have increased the effectiveness of the leaders. Leaders could now prepare for meetings ahead of time by discussing resolutions and planning strategies over the radio. In one case, they actually passed a resolution over the radio and then just had to sign it at their meeting to put it into effect.

Representatives of some government departments working in the area also stated that the radio network had helped in their work. One fieldworker pointed out that he could arrange trips and keep in contact with people in the North more easily and quickly than in the past. He added that people were able to track him down quickly by radio while he

was travelling. Another government agent felt he has been able to improve his efficiency by substituting radio communication for travel and correspondence.

The Formation of a Communication Society

The Wa-Wa-Ta 7/ Native Communication Society, a non-profit Indian Organization, was incorporated in 1974 to take charge of the radio network and to plan for other communication services for the area. Wa-Wa-Ta took over operation of the HF system as the Department of Communications phased out of the Northern Pilot Project. Its first staff member had been a member of the radio installation crew. The board of directors of the society was composed primarily of radio operators. The significance of the formation of this organization cannot be overemphasized. People who had expressed a need for communication now not only had their own basic communication system but had undertaken the responsibility for its operation and management as well.

As of early 1976, the Wa-Wa-Ta Native Communications Society continued to operate the HF two-way radio system and also produced a bilingual monthly newspaper. The staff had become acknowledged experts on the communication needs of the native people in Northern Ontario, and were consulted regularly by telecommunication and broadcasting agencies planning to extend service in the region.

Wa-Wa-Ta is funded by the federal and provincial governments, and provides translation and media production services on a fee-for-service basis.

3. CONCLUSIONS

3.1 Effects of the System: An Increase in Information Flow

Data collected through logs, interviews, and observations indicated that there was an increase in the flow of information in communities which were involved in the project. In Northwestern Ontario, the major increase appeared to be in information about the region (from other communities in Northwestern Ontario) and about government programs and activities which affected the region. The two-way radios were cited as a prime source of information by several residents interviewed, and a secondary source (through conversations with others who used the radio) by others.

In Baker Lake, the radio station also increased the flow of information. Both Inuit (Eskimo) and Kabloona (white) residents relied on the radio station for local news and announcements. For Inuit residents, CKQN was also the chief source of information about the Keewatin and the rest of the North. Many indicated that they now had more information about these areas than in the past.

And for many Inuit, the radio station was the only source of information about the rest of the country and the world.

In both regions, residents who cited the radios as a source of information said that in previous years they had got such information only by visiting other villages or towns, or talking to others who were able to travel. In some cases, particularly in the Keewatin, Inuit residents said that before they had the radio station they knew nothing about what was going on in other parts of the North or in the rest of the country.

Some preliminary Effects

It is too early to ascertain any lasting effects that could be considered "social change" attributable to the improved communication facilities provided through the project. Observers interviewed felt that this increase in information had contributed to the growth of regional identity and would facilitate native organization of the area and planning for its development.

There has been some evidence of effects which were at least partially attributable to the radio project. Chiefs in Northwestern Ontario planned agendas and strategies for meetings in advance so that the time of the actual meetings could be used more effectively. The chiefs interviewed felt that the two-way radios helped them to provide better services to their people. They were able to conduct business and follow-up visits by radio.

By contrast, the time lapse between writing a letter and receiving a reply was often more than a month. Leaders found that a personal conversation with a government official was often more effective than a written communication. And in some cases, chiefs were able to substitute transportation for communication in serving the villages in their territory. A call to a village councillor might sort out a problem more quickly and much more cheaply than a visit by chartered plane.

In Baker Lake, there was less evidence of secondary effects of the increased information flow. The people seemed to be at a more primitive level of development, without the leadership mechanisms and confidence to increase the scope of their decision-making. There the radio seemed to be contributing to broadening the horizons of the village to include not only neighboring villages 8/ where relatives lived, but other regions inhabited by Inuit as well. The radio appeared to become an important cultural mechanism with broadcasts of Inuit music and religious services in Inuktitut being extremely popular. It also seemed to have the potential of bridging a gap between the old and the young, who were considered to be drifting away from the values and life-styles of their parents. Many young people were enthusiastic programmers at the radio station, and became well-known for their efforts throughout the community. The radio station also seemed to

increase the whites' awareness and understanding of Inuit affairs by providing a more accessible channel of information than the more informal channels of contact with the Inuit from which they tended to isolate themselves.

Skills in radio operation learned through the project became the foundation for responsibility for radio operation and maintenance throughout the community. In cases where the original radio operator gave up the position, the training was not lost, but passed on to others in the community. And in northwestern Ontario, native people who assisted with installation of the initial group of radios took over full responsibility for field installations as other communities joined the network.

Participation in the project itself imparted organizational as well as technical skills. The radio station manager had to learn to manage and plan the operations of the station and coordinate the staff and volunteer activities. And radio-telephone technicians had to cope with the logistics of operating and maintaining a twenty-four station network. The most notable outcome of this experience was the formation of a native communication society in Northwestern Ontario.

A Question of Access

The Northern Pilot Project demonstrated that access is a much more complex concept than communication planners might suppose. In many cases, native people were asking for communication services where none previously existed. But in other cases, native people were asking for their own facilities because they said that the ones available in their communities were not really accessible. The existing radio-telephones did not work very well, or they were located in a government office or private dwelling, or operators were unable to help people who spoke little English. Clearly, access meant more than simply having the piece of equipment in the village.

For communication planning, the following access variables should be taken into account:

Physical distance: the actual distance which the user must travel to use the facility (e.g., to the store or band council office to use a radio-telephone, to a community viewing centre to watch videotapes).

Socio-cultural distance: the difference between the social and/ or cultural milieu of the user and the milieu where the facility is located. (E.g., an Eskimo is not likely to walk into a white-operated weather station in his community to use the radio; an Indian health aide will hesitate before asking to use the radio in a teacher's home.) 9/ (Kreimer, 1974)

An important factor which may be considered under socio-cultural distance is opportunity to use the language of the user's choosing. It may be sufficient to place the facility in a familiar environment. However, additional help may be required for two-way radio or telephone use, such as operators who speak native languages.

Cost: the monetary cost to the user of using the facility. (E.g., a long distance toll charge, the purchase price of a television set or radio, and the cost of its maintenance and power consumption.)

The following are attributes of the potential user which must be present before facilities are clearly accessible:

Skill: the necessary skills required to operate the equipment. (E.g., a radio telephone is not accessible if the potential user does not know how to operate it, just as a computer terminal is not accessible unless a person knows the required procedures and commands.)

Awareness: knowledge of the existence of the facility and its function. (E.g., if people in a community do not know that a radio telephone exists there for their use, they cannot be said to have access to it.)

Confidence: the attitude that the user has the right to use the equipment and is capable of doing so. This attitude is likely to exist when the above factors are present. (E.g., the health aide must feel that use of a two-way radio is a right and not a privilege which can be denied by a local official.)

In considering broadcasting, another element of access should be made explicit. Access in common usage refers to the ability to receive messages. Access, however, should be defined as the ability both to receive and transmit messages. If media are to be participatory, and to reflect the interests of the community, the issue of access to transmission facilities becomes vital. The extension of broadcasting services through relaying devices (e.g., microwave, satellites) and local transmitters provides access to broadcasting only in the passive sense. To achieve goals of relevance and participation, access criteria should be applied to both transmission and reception of messages.

Making Communication Facilities Accessible

Communication systems can be designed to facilitate local access at minimum cost. A small radio station requires only a low-power transmitter and simple outputs such as a microphone and cassette tape recorder. Small consoles are available which include turntables and a mixer. 10/

Even network radio or television can be used as a community medium, if local access be provided to a local rebroadcasting transmitter. Such access is obviously important in emergencies when it

may be necessary to reach everyone in the area. However, it is also important to facilitate the dissemination of information relevant to the community and to provide the opportunity to develop skills in collection of information and operation of equipment which residents will need to provide for more of their own communication needs.

A simple interface can be provided so that microphones or tape recorders can be plugged into transmitters. Licenses and network agreements should clearly assign legal liability for local programming.

Video tape has been widely used by community groups and development projects in Canada to disseminate information and build consensus (Access 1969-1973; Gwyn, 1972). Local television has been introduced in some Alaskan villages. 11/ There is no definite evidence that radio is preferable to television as a source of community information. However, radio has the advantages that receivers are cheap, operating skills are easy to learn, and a variety of material can be recorded for broadcast using inexpensive cassette tape recorders.

Facilities designed to provide two-way telecommunication services to remote areas should have the following characteristics:

- High reliability. The system should have reliability approaching 100%, as it is the lifeline for people in remote communities. It should obviously not be subject to the varagies of atmospheric conditions as is HF radio. (High reliability would also, of course, be important for broadcasting and for dedicated health and education uses.)

- Two-way voice communication channels should be available 24 hours per day.

- Conference or party line capability. The "party line" nature of radio allows information to be shared among remote communities. It has proven to be an important means for leaders in remote areas to confer with each other and with officials and agencies in southern centers. In addition, such a multi-party teleconferencing capability has proven useful for consultation between remote health-care personnel and a doctor, and for administration of services in scattered locations (Hudson and Parker, 1973; Kreimer, 1974). 12/ However, there is also a requirement for confidentiality on some calls. Therefore, a two-way communication system should be designed to function in both private and multi-party modes, with a simple procedure for switching modes. A satellite system

could be designed to include both these options, as Parker and Lusignan explain in another chapter in this volume.

-- Equipment should be able to withstand climatic extremes.

-- Equipment should be portable. It should fit into whatever vehicles are used to serve the area (trucks, barges, bush planes, etc.).

-- Equipment should be able to run on local power sources, such as batteries, and should be able to withstand fluctuations.

Participatory Planning: The Key to Access

The best way to ensure that communication facilities are truly accessible and meet the needs of the people they are designed to serve is to involve those people in the planning process. Simply designing an optimal system and "parachuting" it into the village does not meet the goals of developing responsibility and self-reliance.

Local participation in project planning and implementation may be the best possible strategy to gain project acceptance, but it is also time consuming and labor intensive. This kind of planning cannot be done simply by analysts in city offices. The planners must receive input from the field about requirements as local people perceive them, and the draft plans must be discussed and evaluated in the field before a commitment to proceed is made.

Although local people may be able to describe their problems effectively, they will probably not know what the best means of solving them might be.

The Role of the Fieldworker

How can people decide what they want if they have no idea what is available? In particular, how can they decide what kind of media services they want if one of the functions of the media services they lack is to increase their awareness of the alternatives?

Re-enter the fieldworker. Of course, wise choice implies knowledge of options and their implications, and at this point a fieldworker or other resource person assumes a vital role. This person provides the links to the nodes of the relevant information and decision-making networks. Once a problem has been articulated by spokesmen, the fieldworker can help to find the information the people require to understand the potential solutions and to make a choice.

For example, in Northwestern Ontario, the fieldworker helped to provide samples of various types of radio programs. The community was thus in a better position to decide on the content and local/external mix of their program schedule. The decision was theirs, reinforcing their feeling of responsibility and control, and ensuring that content was understandable and relevant at least to a large sector of the community. In Baker Lake, the fieldworker and local station manager produced sample programs on audio casette so that local people could understand what their radio station would sound like.

The fieldworkers should also play a vital role in the implementation of a communication project. Ideally, they serve not only to transfer the technical skills to the local people, but also to develop organizational mechanisms which will enable the community to assume full responsibility for the operation of the system.

3.2 Integrated Planning for Human Development

This project demonstrated that communication cannot be considered in a vacuum. The requirements for communication are influenced by the physical environment and by the social, cultural, political, and economic conditions of the people. From this perspective, communications does not fit into the neat categories of telephone vs. broadcasting, one-way vs. two-way communication, private enterprises vs. public institutions, local vs. long-distance rate structures, etc.

Communication planning and service cannot be handled according to such traditional discrete categories. For example, in remote areas the form of two-way communication required may differ considerably from regular telephone service (e.g., by having multi-party capability); it may require a different kind of management structure from that of most carrier services. Similarly, community radio may be quite different from what is normally considered radio broadcasting because it involves a limited number of hours of programming per day, production by a large number of non-professional people, and flexible scheduling rather than fixed formats.

REFERENCE NOTES

1. In this article the word "Inuit," meaning "the people" is used instead of "Eskimo" and "Inuktitut" for the Eskimo language, in accordance with their native preference and contemporary Canadian practice.

2. This article covers the project activity with the FM community radio stations and the two-way radio-telephone networks. Videotape played mainly a supporting role in the project. An evaluation of the entire project is available from Information Services, Communications Canada, 300 Slater Street, Ottawa, Ontario, Canada.

3. Major efforts to redesign studio equipment for community use have since been made by the CBC's Office of Community Radio. The CBC has designed a studio package consisting of a simple-to-operate sturdy console and microphone turntable, and cassette recorder inputs. The cost is approximately $6,000.

4. The total number of inhabitants in these households was 123 Inuit (about one-sixth of the Inuit population of Baker Lake) and 35 Kabloona (about one-third of the Kabloona population).

5. Reliable telephone service to the south via satellite was provided to two communities in late 1974. Extension of this service to other villages is planned.

6. Twenty interviews were conducted in Weagamow and fifteen in Fort Severn, representing approximately every third house in Weagamow and every second house in Fort Severn. The interviews were done by native people using Indian dialects.

7. The word Wa-Wa-Ta means "northern lights," an ironic name because the ionoshperic disturbances which produce the northern lights (aurora borealis) wreak havoc with radio signals.

8. "Neighboring" in a relative sense, as the closest village is nearly two hundred miles away.

9. In some cases location of the facility in a private or public place may be a factor, but it appears at least in small northern communities that cultural barriers are more significant; some communities chose to put the radio in a private home and usage does not seem to have suffered.

10. Information on low-cost radio station packages and access to network transmitters is available from:

    Office of Community Radio
    Canadian Broadcasting Corporation
    Box 500, Terminal A
    Toronto, Ontario, Canada

11. Information on 10-watt "mini-TV" transmitters being used for television broadcasting in Alaska villages is available from:

Alaska Educational Broadcasting Commission
308 G Street
Anchorage, Alaska 99501

12. See the article by Kreimer in this volume.

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CHAPTER XIII

INTERACTIVE RADIO FOR HEALTH CARE AND EDUCATION IN ALASKA

Osvaldo Kreimer

1. POTENTIAL ROLE OF INTERACTIVE RADIO IN HEALTH-CARE AND EDUCATION

1.1 Introduction

Delivery of health care to scattered populations is difficult for several reasons: the cost of providing the populations with direct access to medical professionals; the cultural barriers between the health-care providers and the users; and the impact of the external service institutions on the delicate socio-ecological balance of the served areas. One possible solution is to spread the sphere of action of the health care delivery system. This could be achieved by using the various levels of health personnel at different locations; e.g., by using aides at the village level, nurses and doctors in the regional clinics and hospitals, and specialists at the major medical centers, interconnecting all the personnel with voice communication for medical consultation and for organizational and educational purposes.

The main responsibility for providing medical care in the system described above falls upon the local health aides, who receive short periods of practical hospital and continuous on-the-job training, who can supply primary care and can give minor treatments, and who have regular radio access to the physicians in the regional clinics. The doctors contact these health aides daily to consult about their cases and also to help them with supply and organization problems. Major medical centers can be connected to this network for consultations with specialists and to organize the transfer of patients who require hospital treatment.

This system permits the presence of a health-care deliverer in all isolated villages, and provides the necessary back-up of direct communication with physicians. Such a health-care system also gives people from the isolated communities the opportunity to act not only as health-care providers but also as cultural relays between the community and the external medical system by capitalizing upon the psychological links and trust among the villagers, in this case reinforced with authority of the physician back-up, which is evident to the patients who can listen to or participate in the exchanges.

The use of radio in health-care delivery is low-cost and provides a minimum but sufficient link between the village and the health-care system. In addition, radio communication exerts a less intrusive impact on the community than the installment of a large external technology and personnel whose adaptation to the social environment usually is not harmonious. The presence of the radio can be used at the same time to continually upgrade the training and medical knowledge of the local aides and of the local populations through educational programs and discussions over the air. The fact that the exchanges between the doctors and aides can be listened in on by the other aides is an important source of training. In fact, the daily exchanges can be as long as an hour and a half, covering several cases per day.

This basic system can act as the foundation on which improvements in telecommunication capacity, local clinical equipment and personnel training can be added. This step-by-step improvement allows for a moderate initial investment in resources, as well as a means to reduce setbacks or failures due to the introduction of major innovations without a previously prepared and well-grounded organization.

1.2 Access to health-care professionals

There is evidence that most health problems that reach a health-care system can be handled by paraprofessionals. Golomb (1974), in an evaluation of community emergency room use in a rural community, stated that more than half of the cases could have been treated by a physician's assistant. Wagner (1973), working in a low income urban community near Harvard, showed that in the triage service, 70 to 75 percent of the nurse-patient encounters could have been handled by the nurse alone, without additional physical intervention.

The participation of local people in the health care process, helping their fellow villagers by providing primary care and treating problems, is not unique to the Alaska setting. The best known similar example is the "barefoot doctors" in the People's Republic of China. There are also successful examples in other regions, such as Venezuela (Haraldson 1973) and Russia, where the "felshers" undergo rigorous formal training (Gilchrist, 1974).

Furthermore, most small communities cannot afford the continuous presence of a physician, and, even if they could, many doctors prefer to live in urban areas. Doctors would not live in those communities. They have come to believe that rural practice is overdemanding, generally unrewarding, and otherwise unsatisfactory, and they will have no access to the socio-cultural environment to which they are accustomed. In the state of Missouri, for example, 200 towns that had one or more doctors in 1950 had none in 1965. Richard Wilbur, Vicepresident of the American Medical Association, is quoted by Dreitzel (1971): "Most

small towns without doctors won't get them no matter what. The rural general practitioner in many areas is unsupportable and we shouldn't even try."

1.3 Cultural barriers to health-care access

Physical distance is not the only deterrent to access to medical institutions--linguistic, cultural, and even informational barriers stand in the way. McKinley (1972) mentions "that several investigators in the U.S., and continuing experience in Aberdeen Scotland is showing, that certain groups will still underutilize the services even when a facility is only a 'stone's throw' away." Parker notes (in Haraldson 1973b) that in the Watts section of Los Angeles individuals needing care at the Los Angeles County hospitals ask whether they are 'ten dollars sick', referring to the cost of a cab ride to get across town. Glazer (1970) shows a direct correlation between 'income of the family' and 'number of visits to the doctors'. Low income people visit the doctor for acute conditions, while the higher income people make more preventive and diagnostic visits.

However, financial factors are not always the explanation for under-utilization. A study in England showed that, even though the service is free there, in 37 percent of the households at least one member of the family was suffering pain and discomfort, but was not under medical attention. McKinley (1972) attributes that to the difference in values, norms, beliefs, and lifestyles between providers and users: "The lower working class clientele perceive, think, verbalize and project differently from the middle class agents encountered in health and social welfare societies." Other characteristics or names have been used to describe the same situation, such as 'social distance' (Wagner, 1973), 'cultural clash' (Haraldson, 1963) 'feelings of oppression' (Cline, 1973), 'class and psychological perception differences' (Lefton and Rosengreen, 1966).

Bullough (1972) found that these well-known barriers to the utilization of preventive services were reinforced (in poor or ethnically different cultures) by alienation, including feelings of powerlessness, hopelessness, and social isolation. Hurley (1971) presents a series of studies showing that people with low incomes do not use services that are not geared to their perception of their needs. On the other hand, when those services are directed to the felt needs of the population, they are used fully from the start.

1.4 The impact of external service institutions

In most of the world, scattered populations are part of cultures that are in a dependent position within their countries. Either because they do not fit in an economic sense into the production system of the central society, or because if they do fit they are in a

handicapped situation, the people in those cultures remain marginal. They have less access to the knowledge and to the decision-making power of institutions that affect their lives.

The activities of these institutions are usually determined by the institution's own definition of needs, by their own way of operation, and by the life-styles of their professional service bureaucrats. The imposition of those institutions on another culture to satisfy a particular set of goals generates side effects. And these side effects may feed the very causes of the problem that the institution is trying to solve. For instance, hospitals in Arctic areas--as other non-native buildings--are heated at levels that correspond to the tastes of the medical personnel, who generally come from a more temperate climate than the native users. The natives in the Arctic have a greater tolerance for cold than the health care providers. In the hospital they tend to lose that ability, achieved after centuries of ecological adaptation. When they return to their villages, they are less able to tolerate their harsh environment.

Similar negative effects--not always over-riding the positive ones--stem from the failure of provider institutions to understand the users' culture. Importation of food habits, housing, consumer attitudes, and new hierarchies of power and prestige increase the disintegration of native societies and reduce the chances for the local cultures to maintain their own customs and social orgnaization.

The system of local health aides, backed-up by communication with the physicians at regional health centers can be a successful means of balancing the use of external technologies, knowledge, and systems with a locally-based health care service.

2. THE ALASKA SETTING

2.1 Sociogeography

More than half of the 60,000 native Alaskans live in small communities scattered in the 600,000 square miles of continental Alaska and the Aleutian islands. They are settled in 181 communities (average population: 176), most of which are severely influenced by geographical isolation and the rigors of the environment. The light/dark cycle, creating short summers with midnight sun and long winters with few hours of daylight may affect the biological cycle of nature and human behavior. In addition, the severe cold during two-thirds of the year increases the difficulties of life, and the eternally frozen subsoil, 'permafrost', which underlies sixty percent of the Alaskan land mass, inhibits the possibilities of excavation for cellars, wells and pipelines, and for other means of drainage and sewage.

By 1975, almost all of the villages had no year-round ground transportation links with each other or with the cities. Access is mainly by air or seasonally by boat, snowmobile, or dog team. The coastal villages are reached daily or weekly by ferries and only a dozen of them have direct access to the highway system. Most (102 out of 181) had no telephone service by April 1974, and thus had to rely on radio communication, which is severely hampered by atmospheric and mountain interference.

The villages are places of contrast. Airplanes are used by people that fight for subsistence; satellite radio transceivers are placed in houses where the heating comes from metal barrels transformed into fireplaces. Year-round jobs in most villages are few--most adults are unemployed or have only seasonal jobs.

From 1940 a dramatic shift has taken place among the native population caused first by the military-related development of Alaska and later by the discovery of minerals, gas, and oil. Strategic and economic considerations have made it profitable to extend Western civilization farther into Alaska. The nomadic and self-sufficient components of the culture have been converted more and more into a sedentary life-style and monetary economy.

Federal government activities have been the biggest contributor to the Alaska economy since the beginning of World War II. Exploitation of gas and oil resources will likely become the chief factor of Alaska economy in the future. The expected increases in personal income, state government and population size will undoubtly further change the situation in Alaska. Depending on how these resources are allocated they can make a positive, neutral, or negative impact on the present serious problem of the majority of the natives, whose levels of unemployment, income, school achievement, physical and mental health, longevity, and almost every other conventional measure of personal and social welfare were substantially lower than those for non-native Alaskans, or for the U.S. population as a whole.

Migration to the cities and disruption of the life in the villages have been the main consequence of the imbalance of the cultural exchange. However, two new trends are appearing: the slowing of the migration away from the villages and an upsurge of participation by the natives and their organizations in decision-making about their own lives and institutions. In fact, even if the migration to the cities continues, more than 75 percent of the villages have grown during the period period from 1950 to 1970, and in half of the cases they increased more rapidly than the approximate rate of natural increase. The Land Claims Act of 1965, a legal settlement by which the natives yielded their historic rights over the state in exchange for a definitive title over parts of it for a significant monetary compensation, fueled the constitution of native regional profit corporations and native non-profit associations. These corporations and associations are organizing

production units with the purpose of generating a self-substaining economic base, and are taking charge of the supply of basic services, including education and health care, for the native population.

2.2 The health situation in Alaska

In 1954, just before the U.S. Public Health Service assumed responsibility for providing health care to the native Alaskans, a study team headed by Dr. Thomas Parran produced a milestone report. It showed that the Alaskan natives were victims of sickness, crippling conditions, and premature deaths at a rate exceeded in few parts of the world.

Most of the diseases were brought by the earlier white traders, whalers and miners and "planted in virgin soil, these diseases thrived too well, decimating entire communities" according to the Medical Director of the Alaska Area Native Health Service (Lee, 1973).

By 1972, the health service reported major gains in the containment of tuberculosis (practically irradicated), and reductions in deaths from infectious diseases other than TB and from diseases related to pregnancy and childbirth. In 1954, such diseases affected Alaskan natives by ten times the proportion for the U.S. whites; by 1972 this was reduced to 1.5 times. Similarly infant mortality was reduced from ten to three percent in that period.

On the other hand, in two areas, mental health and dental health, similar progress was not achieved. Moreover new problems have arisen: the introduction of the market system based of external capital to the bush culture without the creation of adequate employment, and the simultaneous imposition of foreign patterns of consumption, have weakened the strength and vitality of the native population. There are major increases in the rates of death from alcoholism, suicides, and homicides, as well as hospital admissions resulting from accidents, psychological disorders, and abortions.

The high-priority health problems identified by the medical authorities and native leaders currently are: mental disorders; alcoholism (considered a direct or contributing cause in 20 percent of all deaths); venereal disease; otitis media; water supply and sanitation (because solutions that were adequate for nomadic subsistence and traditional life are not suitable for the requirements of modern western-imitated life); and substandard housing that contributes to the high incidence of environmentally related diseases--infectious, rheumatic, and even mental disorders.

Health care for the natives. Medical care for native Alaskans is supplied basically by a branch of the Public Health Service: The Alaska Area Native Health Service (AANHS) of the Indian Health Service (IHS). It is supplemented and overlapped by other federal, state and local institutions and the private medical sector. Except for the private sector, the services are mostly free.

Even if the white professionals (administrators, doctors and nurses) are in the positions of control in the AANHS, the natives are participating increasingly in its management. This increasing participation occurs mainly in two ways: first, native leaders representing the users are members of Advisory Boards and Health Councils; and second, the direct providers of care in the villages, the health aides, are native residents, who are elected and paid by the village authorities.

The native health aides. Alaskan health aides number 185 indigenous auxiliary workers, serving in 156 remote villages. They are selected, supervised, and paid by their own village councils and the Public Health Service contracts with the villages for their monthly services (salary $400-510 in 1972). They are trained in large centers for a few weeks, and continue their training in the villages guided by public health doctors and nurses who visit the villages once a month. The total period of formal "not-on-the-job" training runs sixteen weeks and is divided into four sessions. Each session is planned so that the aide will not have to be away from home and family for more than four weeks at a time. The curriculum is problem oriented and fifty percent of it is practical training. The aides are provided with a selection of appropriate drugs with detailed instructions. Practically all of the aides have an otoscope, thermometer, stethoscope, baby scale, sphygmomanometer and hemoglobinometer. Cold spots of the house serve as refrigerators. In 1972, the average age of the village health aides was 42 years and their formal education was at the elementary school level. In addition, they had an average of about eight years of experience on the job, indicating that they tend to stay at their work. Since their family and work are in the village, the migration rate of the health aides is small. This contrasts with the rapid turnover of highly trained medical personnel in rural Alaska.

Tanama Public Health Service Unit. The villages are grouped in seven Public Health Service units, each having its own hospital, and in some cases, there are also town clinics served by public health nurses. One of those units, Tanana, has the worst communication problem in Alaska. Tanana includes a series of villages in the central part of Alaska, some of them on the Yukon River and north of the Alaska Range. The unit has a regional hospital at Tanana and only one clinic staffed by public health Nurses in Fort Yukon. The topography and the frozen rivers isolate most of the villages during several months of the year, when they can be reached only by plane. The population of most of the villages is Athabascan, except for the Eskimo village of Anaktuvuk at the northern extreme of the Service Unit.

Of the 4,500 inhabitants of the Tanana unit who live in small communities, about 3,850 are scattered among twenty-five predominantly (85% native on the average) native villages. The people live in log cabins and use wood as fuel. In 1974, only three of the villages had year round road access, and only nine had electric power available to

the majority of the population. Most of the villages had no telephones and high-frequency (HF) radio communication in this area is mostly unreliable due to magnetic fields and terrain conditions. The Tanana Service Unit was chosen as the main site to test the possibilities of satellite communication in health-care delivery and education.

3. THE ATS-1 ACTIVITY. USE AND EVALUATION

3.1 Range of experimental uses

In 1971, the National Library of Medicine's Lister Hill National Center for Biomedical Communication funded a project on overcoming communication problems by using a satellite link. ATS-1, the first NASA Applied Technology Satellite, was launched in 1966 and is still functioning. This satellite is used liked a mirror in the sky (22,300 miles high) to provide a line-of-sight communication link to and from the ground stations located in the Tanana Service Unit and in other places throughout Alaska.

The network of ground stations in Tanana was constituted by ten villages initially and later expanded to fourteen villages.* Among the original stations were one at the Tanana Hospital and one at the nurse-operated clinic. These stations were also connected to the station at the Alaska Native Medical Center (ANMC) in Anchorage and with those in a few communities outside the unit.

The primary use of the ATS-1 network has been for daily "doctor-call" between a doctor at the hospital and the health aide in the village. Every day, a doctor calls each health aide. The health aides, who are sufficiently fluent in English present their cases, ask for advice, and check their diagnoses and patient-management plans. If the seriousness of the case requires that the patient be evacuated to the hospital, appropriate plans are made. Similarly, the radio is frequently used for emergency calls when immediate help is required.

The capacity of this network for group two-way communication facilitates educational experiences related to general education and to health-care education. Lectures by satellite were compared with classroom lecturers in terms of student preferences, and radio courses were compared with hospital courses in terms of scores on different tests. In addition, the amount the health aides learned due to listening and

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* Initially, the sites included the service unit hospital, the ANMC, ten villages in the unit, two villages on the North Slope, and St. Paul on the Pribilof Islands in the Bering Sea. In 1973, because four of the stations were not used much, the stations were removed to additional villages in the unit (From Hudson and Parker, 1973).

participating in exchanges was measured, and the effects of formal and non-formal educational programs for the schools and communities were evaluated. The results of these measurements and evaluation are reported in the following section.

3.2 Evaluation

The satellite radio link communications system can be evaluated both in terms of its value to the health-care delivery system and in terms of its educational capabilities. Although evaluations of the impact of such communication on the health-care delivery system usually are done separately from evaluations of the education impact, in practice these two types of activities do not always occur separately. In fact, in many cases, the exchanges related to the health-care process have educational value. Similarly, the educational exchanges can have effects on the health-care process, not only in terms of upgrading the training of the providers, but also as a means of disseminating information and of shaping attitudes about health prevention and sanitary procedures. With the above concept in mind, we have distinguished between the educational and the health care dimensions of the evaluation, for the purpose of clarity of exposition.

3.3 Evaluation of Health-Care Communication

Several questions were defined as central to this evalution. They were grouped in terms of efforts, performance, adequacy, efficiency, and process.

Effort. The main focus of this criterion, i.e., the energy and action of the service team, can be measured in this case by the number of days in which the system actually operated, how much the doctors were willing to take on the additional burden of calling the villages and keeping track of the cases, the frequency with which the health aides answered the physicians' calls, the number and kind of cases discussed, and the number of other care-related uses of the exchanges.

Performance. Because it is practically impossible to measure actual overall differences in terms of health outcomes that can be attributed to improvements in the health-care system caused by the new communication, the evaluation of the performance criterion focuses on the effects of the radio communication on characteristics of the system, i.e., radio-access to the physicians; the health aides' self-assurance; the professionalism of the treatments; the decision-making about the transfer of patients to the hospital; the patients' chances to talk to their families in the village; and the need for hospitalization and the process of deciding when to hospitalize. In an attempt to evaluate the effects of the radio communication on the medical outcome of specific cases, the doctors rated the expected possible effect of each consultation on the outcome of the case.

Adequacy. To measure the adequacy of the radio communication in fulfilling the need, some assumptions must be made. First, that the need of the health aides is to have regular and/or immediate communication with the physician, and secondly, that there are different kinds of messages necessary for discussing different kinds of problems. The first assumption is primarily a quantitative assessment of the capacity of the exchange, mainly in terms of time availability and requirements, and the latter assumption is concerned with the adequacy of the voice and data communication of the link in transmitting all the information that is necessary for a useful consultation.

Thus, the evaluation focused on the capacity of the system in terms of its transmision features to meet the particular communication needs of the area's population adequately, including the different kinds of health problems of that population.

Efficiency. The usual way to assess efficiency is to compare the methods used to achieve the same or similar goals under similar conditions. In this case direct comparisons would have been convenient. The important questions include: are satellite communications more efficient than HF radio, which is the system that is being used in several other villages, and which was used previously in these villages? Is this satellite communication system more cost-effective than the one used in Canada for its northern native population? How would this system compare with a communication system that included a television transmission capacity?

Process. What attributes have made this project successful, and to what extent? To what extent does radio communication affect the different users of the program, i.e., the doctors, the aides, and the patients? What are the conditions that make the program successful? Can this program be reproduced in other regions, and how do changes in the operating conditions affect the results? Have there been negative side-effects? Has there been resistance by the personnel or by the population to having their cases discussed over the radio? Should the process be changed for the treatment of mental health problems?

In order to answer these questions, several research designs were constructed. The number and content of radio contacts between doctors and aides at satellite-linked villages was compared with those for a sample of similar villages linked only by HF radio. Also the hospitalization rates (number of members of each village being admitted to the native hospitals) were measured, both in the experimental group of villages and in the control group, before and after the installation of the satellite radio. Both groups of aides were interviewed before and after the installation of the satellite radio. In addition, both groups of aides were interviewed in their villages, and special records of the exchanges with the doctors at the hospital were analyzed in terms of the content of the exchanges to measure certain characteristics of the cases and the consultations. This research was carried on in

the period between the inception of the satellite radio system in 1971 and its end in 1973, covering two years of actual operation. Records of the previous period were consulted to determine the frequency and duration of the exchanges at that prior period when the villages were equipped with HF radio. Visits to the sites and personal interviews were conducted by different researchers during the entire period.

3.4 Results

Effort. The evaluation of the amount of effort put into the project by the different members of the system showed a surprisingly high dedication, maintained during the two and a half years analyzed and kept at those or even higher levels afterward.

The average health aide answered the 'doctor-call' 305 days a year or 85 percent of the time. Not every time that the health aide answered did she have something to report: in fact, in 17 percent of the possible cases they answered but said that they had no consultations or administrative matters to discuss. But in the other cases they did: in fact, the aides have an annual average of 250 patient consultations and 281 medical administrative matters exchanged.

In an average month, with about twenty consultations, fourteen refer to "acute problems", four to "acute follow-ups", and two to "chronic management". There were 2.0 consultations per person annually. Therefore, a typical family with (5.6 members) required 11.2 radio consultations per year. Each patient-consultation lasted on the average 3 minutes, while the average duration for administrative exchanges was only one minute. During 1973, there were 45 emergency calls recorded for the 13 villages, some of which involved more than one patient. Seventy percent of them resulted in evacuation of the patient to the hospital, and 20 percent were resolved by the consultation with the doctor.

In order to analyze the content of the exchanges, questionnaires and codes were developed which asked the physician consultants to rate various elements of the interaction (diagnoses, severity, type of encounter, management change, and predicted outcome). They rated a period that covered summer, autumn, and early winter months; no significant inter-seasonal variation was found. Satisfactorily coded information was obtained on an average of 82 percent of the 2,004 cases.

The most frequent diagnoses, accounting for 63 percent of all cases, were respiratory diseases, ill-defined symptoms, skin difficulties, ear problems, and accidents. The distribution of diseases among villages was quite homogeneous, but a few of them had special patterns. In terms of severity, only one-half of one percent of the cases were considered "very severe and complex" (categories 7 and 8, on an eight-point scale); two-thirds of the cases were considered "a minor problem with some risk of complication" (category 5).

The proportion of days in which the satellite link was not available was less than two percent, and the failures of the ground stations had only marginal effect (less than one percent of the days) on the ability to reach contact. This was due to efficiency in fixing them or in replacing parts quickly by the University of Alaska teams, their own Native health Service, or the ingenuity of the local people.

The strength and intelligibility of the radio signals was rated at the Minitrack Station at College, Alaska. In 84 percent of the cases for strength and in 62 percent for intelligiblity, the signal was rated as excellent (the best on a five-point scale). Only 4 percent of the ratings on both criteria fell in the three lower levels of the scale.

Performance. The results of the valuation from the point of view of performance were organized around seven goals of the project.

1. To offer health aide-to-doctor communication, either on schedule or on immediate request whenever the aides consider it necessary. The effort data showed that the link was available on practically all days, and no mention has been recorded of situations in which contact was required but not achieved.

2. To improve the professionalism of the health-care delivery to the village natives. The fact that the health aide could consult about his cases with a physician and improve his management plan because of that consultation was considered as an increase in the level of professional care.

The results show that several thousand cases were handled during the experimental period. It was not possible to get the health aides to keep records of all the cases they assisted. However, records from one of them, considered average by her performance characteristics, show that in a two month period, she served 40 percent of the village population and that two-thirds of the cases seen by her, the less simple ones, were discussed with the physician during "doctor-call". Her records show also that, for her, just one radio consultation was enough to handle the case for three out of four patients.

In each teleconsultation the physician reviewed the case features, diagnosis and treatment proposed, on the basis of the verbal data provided by the aide.

In half of the cases, the doctors rated that the "health aide had planned", or "could have planned" correctly on her own judgment. In the remaining cases, 20 percent "required minor changes in the management plan proposed by the aide", and 30 percent "required major changes". As could be expected in the less severe cases, the health aide management plan was confirmed by the doctor more frequently than in the more severe cases. In the latter, significant or major changes were more frequently suggested by the doctors.

3. To increase the self-assurance of the health aide. Data collected in personal interviews with the aides by Hudson (1972) indicate that seven out of nine aides felt that the backup connection with the doctor had had a reassuring effect on them and had also increased the confidence of the patient population in their advice and services. They stated that, in their impression, the patient follows their prescription more when it is backed by the "radio-doctor's" support. One of the aides however, said that for her the improved link with the doctor implied a reduction in her responsibilities and made her more dependent upon his indications.

4. To improve the health outcome resulting from the relation of the patient with the care system. In the opinion of the doctors, there was a direct relation between the "severity of the problem" and the "predicted effect of the consultation on the outcome". Definite and marked effects were predicted for more than 75 percent of each of the four highest categories of severity, but for only 40.5 percent of the cases in the less severe categories. As might be expected the doctors predicted a definite effect in most cases (77 percent) in which they suggested a major or significant change in treatment. The interesting point is that they also predicted that "consultation would have a definite effect" on 23 percent of the cases coded when no change in the health aide's planned treatment was suggested. Data from the health aides' questionnaires explain this, by showing that seven out of nine aides mentioned the contact with the doctor as the reason for feeling more confident in their job than before (Hudson, 1972). Boosted confidence seems to make the health aide more effective with the patients under his care.

5. To improve the decision-making process regarding the transfer of patients to a hospital. It is difficult to find direct measures for this criterion. One approach is to see if there are different authorization patterns depending on the type of problem and on the attending health aide. For example, there were more significant differences in the authorization requests and requests granted for travel due to respiratory problems than for any other cause. Similarly, while requests from one aide were accepted in only seven percent of the cases, requests from another aide were honored 35 percent of the time. Thus, if the radio communication had not been available, such travel requests would have been authorized by the aide, or patients would have been transferred on less appropriate clinical grounds than they were when radio communication was available.

6. Reduce the need for hospitalization, either by reducing the number of admissions or the length of stay. Good descriptive data were obtained about the cases authorized and those not authorized for transfer. Among doctors, there were significant differences in travel requests and authorizations. This suggested different confidence levels on the part of the consultant physicians towards the health aides. Furthermore, the health aide with the largest number of travel requests had the least transfer authorizations.

It is difficult to find good indicators for these villages concerning effects on health-care delivery on the population's health. One possible indicator is the number of native patients from the villages who are admitted as in-patients in the main hospitals serving the natives of that Service Unit, and the average length of their stay in the hospital. Hospitalization rates for patients from "satellite" and "non-satellite" villages were analyzed (Table 1). Even though the hospitals analyzed are not the only ones used and even though some natives prefer to go to private physicians, we have considered these two hospitals as representative of the group for this pre-post analysis.

TABLE 1

PATIENTS ADMITTED FOR ALL DIAGNOSES IN BOTH HOSPITALS, RESIDING IN SATELLITE AND NON-SATELLITE VILLAGES

	Before Satellite FY 1970	FY 1972	After Satellite FY 1973
Satellite villages (experimental group)	255	278	276
Non-satellite villages (control group)	185	182	109

Comparison between the number of patients from satellite villages admitted to both hospitals, before and after the installation of satellite ground stations, shows that there was no significant change. The overall trend shows stability.

However, when these figures are compared with the ones corresponding to the non-satellite group, it is clear that there are different trends influencing the groups. While the figure for satellite villages remains stable, the number of patients hospitalized in native facilities from the non-satellite villages drops 42 percent from 1972 to 1973. Different explanatory hypotheses for the drop in admissions for the control group were analyzed, and all of them seem very unlikely, e.g., population reduction, health improvement, white population proportion.

One alternative explanation can be suggested; many patients in non-satellite villages could have switched to Medicare and/or Medicaid, an option for natives introduced during 1972 that allows them to go to private physicians at public expense. This hypothesis suggests also that the villages served by satellite radio prefer the public Indian Health Service to the private care sector. Meanwhile those served by

the Indian Health Service, without the satellite link between village and hospitals, could be shifting to the private sector, now that financial barriers have been removed through Medicaid and Medicare.

This drop in the non-satellite villages' hospitalization rate appears significant for all categories of admissions, including pregnancies. There is no evidence of differential trends in birth rates. Nor is the distance to the hospital greater in non-satellite villages. Access to other services like Medicaid and Medicare is similar for both groups, as is access to air transport facilities. We can suggest then that improved telecommunication has resulted in higher acceptability of the IHS system and preference for it, when the choice of private services is available on an equal cost basis.

How does improved communication relate to the reduced length of hospitalization that was found? A plausible conclusion is that, with daily access to the doctor, the cases requiring hospitalization can be discovered at an earlier stage, and therefore would require shorter hospitalization. Also, ease of follow-up by radio might encourage the physician to discharge patients earlier.

Adequacy. The fact that there was the possibility to consult on as many cases as the aides considered necessary within the amount of time available indicates that the system is adequate for the size of the population.

Efficiency. Compared with other systems, the satellite radio link deserves a high efficiency rating. First of all, the replacement of HF radio with satellite radio in the experimental villages resulted in significant increases in the number of contacts, and consequently in the number of cases consulted on.

Comparison of the number of days in which contact with the doctors was made and the number of episodes consulted on before and after the installation of the satellite link shows an increase of more than 400 percent for the first year, and 500 percent or more for the second year.

Community acceptance of the service is a major indicator of success in terms of efficiency. The tentative results suggest that residents in the villages having satellite communication tended to remain in the Native Health Service, while residents in villages without reliable medical communication selected alternative sources of medical care, (i.e., private practitioners, Medicaid- or Medicare-financed care). This finding is a strong indication of the efficiency of the system in terms of consumer acceptance and loyalty.

Process. Several factors have played major roles in the success of the experiment. First of all, the strong connections of the health aides with their community were extremely important. The aides

were selected and appointed by the native authorities from among the people of the village. They had lived there previously, and continue to do so. The turnover of the aides is minimal, while the white people appointed to other tasks (nurses, doctors, etc.) tend to leave after a year or two.

The aides' training was planned to cause only minimal disruptions in their family life due to travel. They go to the hospital for four sessions, one per year, and each session lasts no more than four weeks.

The location of the radio also influenced the utilization rates. Social and convenience barriers can be a deterrent to its regular use. For instance, in the non-satellite villages when the HF radio was installed outside the house of the aide--generally, in the school--the aide made only half as many contacts as did the aides who had the radio at home. Interviews with the former group showed that they were not willing to go to the school, which they considered an institution separated from their culture.

Another component that made a favorable impact upon the functioning of the system was the alarm button added to the health aides' terminals. It buzzes at the hospital and permits the aides to initiate calls and contact the hospital at non-scheduled hours, basically during emergencies.

No resistance was found to the use of the teleconsultation, either from the doctors or from the aides. The patients were also willing to have their cases discussed over the network, and the data on acceptance and loyalty are a strong indicator of their positive attitude.

The program seems to be replicable in other regions without major modifications. The strong local bonds of the Athabascan Indians can be found in most rural communities, not only in cases of traditional cultures of the area, but also for recent settlers and colonizers. If the geographical conditions make HF radio reliable, a cost-effectiveness analysis must be run comparing satellite vs. HF communication. (For the different configurations of satellite systems see Lusignan and Sites, 1974.)

Summary of Health Care Evaluation Results Although the data show dramatic increases in the frequency of contact and the number of new cases treated, they do not in themselves demonstrate improved health care. Given the small number of villages involved and the difficulty in record-keeping at the village level, it is not easy to demonstrate a statistically significant improvement in mortality and morbidity rates. Nevertheless, the data do show that health aides can consult a doctor on most days when there is a patient in need of medical attention and that

the number of cases treated by Public Health Service doctors has significantly increased. Also doctors and health aides, responding to a questionnaire, all said that they were convinced that the quality of health care had improved.

Additional data and analyses now reinforce the conclusion advanced that health care has improved as a result of satellite radio communication. There has been an increase in supervision; health-aide records show that health aides discussed two out of three of their cases with the doctor, including the most complex or important ones. These resulted in increased professionalism in the diagnoses and treatment, as well as significant changes in the management plan of the patient by the doctor consulted.

The absolute number of completed consultations increased up to 500 per cent. In terms of efficacy, there was an improved capacity to handle emergency cases and to solve administrative and supply requests. In terms of inferred outcomes, significant positive effects were expected as a result of the consultations. In terms of consumer acceptance, anecdotal and indirect information about patient reassurance suggests an increase in acceptance of the Indian Health Service and the native aides. In terms of loyalty or adherence to the system, tentative findings suggest that residents in satellite villages tend to remain in the IHS system, while residents in villages without reliable medical communication may select alternative sources of health care. Taken as a whole, this evidence supports the chain of inference that improved communication between doctor and health aide does lead to improved health care.

Evaluation of Health Care Education. The two-way multistation characteristic of the network has also special implications for education. First of all, media courses and lessons can be prepared, allowing for feedback from the students. Question-and-answer quizzes, complaints and administrative requests can be easily accomplished at a distance. Moreover, this capacity permits the origination of the programs at different stations of the network, allowing for more equitable distribution of the creative capabilities among different centers.

Learning by participation in decision-making can also be explored. Health personnel, community leaders, and population can participate in discussions about health care organization, disease prevention, campaign, etc., increasing their knowledge about care and health problems. Furthermore, in cases like that of the health aides in Alaska, learning by listening to the exchanges between the other aides can be expected.

Several experiments have been performed and evaluated during the ATS-1 activity period in Alaska. They offer evidence of some of the potentialities outlined before, as well as show areas where improvements are possible.

Formal Courses. A Coronary Care course in nursing was offered from September, 1973 to January, 1974 via ATS-1 radio. The University of Alaska Continuing Education offered participating students three academic credits. This course was related because it has a well-established curriculum, easy to implement, and should provide the nurse in outlying hospitals in Alaska training to use equipment available to them but not much used for lack of training. The lectures were held weekly and lasted two hours each. Results of the evaluation performed by Fowkes (1974) showed that out of 25 students enrolled, 16 completed the course and 15 submitted the final questionnaire. Analysis of pre- and post-scores show that learning took place. Further, the performance levels - states Fowkes -- on pre- and post-tests were comparable to those of a typical community college near Seattle where similar courses were given in the traditional classroom setting. The nurses' own evaluation indicate enthusiasm about the course and a desire for additional program.

On-the-job training. The health aides were unanimous in saying that they have improved their knowledge about diseases and treatment because of the daily radio communication with the physician (Hudson, 1972). Furthermore, the number of changes to the aides' management plan for the patients suggested by the physician goes down the longer the aides have the radio. This means that the improved communication has enhanced their ability and skills to diagnose and to plan treatment.

However, this difference is small and its statistical significance is tenuous, due to the small number of cases. One possible reason for the lack of an important difference could be the mode of communication used between physician and aide. The mode used tended to be direct and prescriptive. A possible suggestion for change could be to use a more analytical learning oriented approach in which the physician not only asks about the condition of the patient and prescribes treatment, but also analyzes the way in which the aide diagnosed and made the decision about treatment. The physician would review and advise about those processes in a teaching approach. This would probably imply longer exchanges. However, this extended use of time could be compensated by the reduction in the aides' need for teleconsultation due to their increased self-sufficiency and ability.

Enrichment lessons for classroom education. During some of the hours when no medical exchange was performed, the system was used for lessons for the elementary schools. W. Parker (1974) did the evaluation of this educational use of the ATS-1 communication. His reports show many of the difficulties as well as the possibilities of this kind of use. Lack of coordination between radio-lessons and curricula, poor scheduling, weak logistical support, and overenthusiasm about the actual software production capacity seemed to be difficulties in achieving major success. Especially disturbing were the listening problems: in the classroom the loudness and intelligibility necessary

for the signal is higher than the one required by one health aide at home or even a small group of listeners. Another problem was the cultural differences among the participating villages. The Whaling Festival broadcast from an Eskimo town did not attract the attention of the Athabascan native.

However, school exchanges between classes in Alaska, Hawaii, New Zealand, and other points around the Pacific obtain high participation of the students and teacher. Also on the bright side, programs prepared by the teachers in the villages obtain higher levels of participation than similar ones prepared at the coordinating facility at the University of Alaska. High levels of participation were also achieved when the programs referred to problems common to a certain sector of the audience, like teachers, health aides, and librarians; their participation was constant.

It was found that four stations could participate comfortably in discussions of one hour, while six participated when the program lasted an hour and a half. Administrative and decision-making discussions or reports were also high points of participation. For instance, the National Education Association News program with an audience of 15 stations had an average participation of 7.8 stations.

Discussion of the Results. The improvement in communication due to the installation of reliable interactive radio improved health care. It is clear too that the increase in reliability stemming from the use of the satellite link instead of an HF link, given the difficulties presented by the topography, is more than just an improvement. It is the difference between practical unreliability and almost complete reliability. It is also possible to state that the satellite radio system can be profitably used for the education of the health-care personnel both in the formal and on-the-job format.

The discussion would not be complete, however, if additional issues were not included. First, what are some of the bad effects of improved intercultural contact? Second, are the findings from this experiment generalizable to other areas? And, third, what further role does radio have in the health-care field?

3.5 New Problems from Improved Contact

As was mentioned before, several types of diseases are increasing among the native populations. On the whole, they can be considered diseases of social and psychological origins in contrast to the ones of a more clearly physiological origin. Under circumstances of high stress, different types of personal disorders are generated and magnified. Unemployment is about 70 to 80% among the Native Alaskans. Only 20 to 30% of the adult population have a stable job; the best--in the best of cases--are employed during two or three months in the temperate season. Commercial hunting has devastated the game and, on

top of that, the fascinating presence of canned and "imported" food on the grocery shelves has shifted most of the population from self-subsisent food habits to the habit of buying non-locally- produced food. As more families receive some kind of "welfare income", the money goes to these foods. Change of diet brings problems to Native Alaskans.

> The traditional Eskimo staples (seal, whale, caribou, and fish) are not only rich in protein but high in vitamins as well. Sources of needed vitamin C for white man are not readily available. They (the Arctic people) compensated that by high intakes of vitamin A. (Now) most Eskimos take their milk from cans of condensed preparations with much reduced vitamin content. Tang helps some, but Coca-Cola is more popular as a drink. The result is a diet lower not only in protein but in vitamins as well. Dental cares were almost completely unknown among the Eskimos forty years ago. They have to chew energetically the meat of the reindeer or caribou. Now their mouths are oral sewers. The whites have swamped the Eskimo in a mass of sugar and carbohydrates (Bendiner, 1974).

Breast-feeding the babies for three years had provided both a natural contraceptive technique and the necessary defenses against possible diseases. A stronger correlation has been found (Bendiner, 1974) between reduction in breast-feeding and perforated eardrums with or without otorrhea: "The rate of otitis media declines directly with the distance from the foci of the white way of life". The same relation has been shown with respect to arterioscherosis (Bendiner, 1974).

Alcoholism is one of the most serious consequences of this cultural contact. The increases in suicides, homocides, and accidents are not caused directly by alcoholism; but alcoholism is an intervening variable between social disintegration and those unfortunate outcomes. "The man of the family may drink because he collects garbage (practically unknown previously when each element was used and/or recycled) instead of pursuing the seal, the caribou, or the whale, or because he senses the slow dissolution of the family and of his place" (Bendiner, 1974).

Resistance to cold and other Arctic contingencies that had been achieved after centuries of trial and error in diet may have been upset by the new ways of nutrition. In the hospitals, because of the HEW regulations, the food must be bought only if in its processing certain hygienic rules are followed. Those rules are based on needs and standards completely alien to the way in which the hunters or fisherman or summer farmers operate in the Arctic. Therefore, not only is the food alien to the region, but also jobs are not created locally and money is spent outside the region.

Bad housing has been related to several physical diseases and mental disorders (Haraldson, 1973). The ingenuity of the natives had been able to develop habitats, like igloos and log cabins, that for their time and ecology were adequate. The normal development of new architecture based on the creativity and craft of the people and local professionals, responding to new needs using local materials and manpowers, has been slowed down by the practice of federal agencies that build or buy buildings following non-indigenous standards. The Federal Housing Administration, for instance, will not allow loans for building of log structures. Schools, airports, hospitals, warehouses, and houses for the non-local officers employed by the agencies are "imported and implanted. Not only is the cost of those buildings much higher than the ones eventually produced locally, but they propose standards of furnishing, heating, and so forth, that are either inconvenient or unachievable for the majority of the population. The result is money spent outside the area, more unemployment, lack of opportunities for the development of the local craft and architecture, and increased alienation.

Suchman states (1970) that "data support that the more deviant an individual is, the more likely he is to have an accident. Such deviance represents a rejection of the sane and safe in favor of the nonconventional. His rejection of society means rejecting the many protective measures that society has developed to enhance his survival." In Alaska, a whole culture and way of life appears "deviant" from the white society point of view. And vice-versa, "sane and safe habits" are--from the Native perspective--destructive of their values and ways of dealing with nature. Social and medical data suggest that a public service system that disregards this basic issue will not be effective and eventually can provoke or intensify negative trends.

3.6 The Ability of These Findings to be Generalized

With respect to the exportability of this experience to other regions, three different sets of factors should be analyzed separately: those relating to the facilitation of the communication by new technical means, those relating to the native health aides, and those relating to the public nature of the health-delivery system.

In terms of the communication, the most important finding seems to be that when the contact is facilitated and regularized, the use of that contact increases. In this particular case, the interactive medium of radio via satellite offers an important technical improvement over the previous HF radio system, linked via repeating stations on the ground. Furthermore, the satellite link avoids the usual pattern of connection that tends to follow the sequence beginning at the big city, then connecting the intermediate ones, and only finally reaching the remote villages. This usual sequence delays the service to those places that need it most, and increases pre-existing disparities. Via satellite the connection to a remote village is achieved directly with no need for intermediate stations or switchboards. The implication of this

break in the pyramidal hierarchy of cities and services is that this system is especially fit for plans to reduce those disparities and to homogenize the levels of service provided to the population, rural or urban.

The findings of the study reinforce the acknowledged ability of the native resident health aides, operating in the area where they belong culturally and having only a short formal training. Also, in this case, they have proved that they are able and willing to use possibilities offered by a useful innovation. They showed perseverence, mental sophistication, and communicative ability to perform the exchanges with the physicians without major difficulty.

It is possible to expect that these qualities will appear in other cultures too. However, it seems that these attitudes derive in part from the fact that the aides were selected by and report to the native authorities. In part, it requires also a certain attitude and training of the physicians and administrators that become to a certain extent resources for the task of the aide. Another important point in terms of replication is the kind of upgrading of the aide that is planned. Continuous training of the aide is required to achieve higher professional levels (public nurse, etc.). Unless this process is accomplished, and is done so in relation to the development of the village, the aide-radio-doctor system will be just a temporary patch-up that will die replaced by clinics with external standards and personnel that will generate the same problems outlined before. The psychological and cultural adaptation of the health-care system to the village, now achieved through the local aide, will be lost.

The curriculum for the aides' education, therefore, should be geared to the real priorities of the region and focused toward increasing their autonomy and self-reliance, instead of emphasizing their dependence on a technology that is beyond their reach and management.

Analysis from this study also shows that it is possible to obtain a positive attitude among the patients toward a public system of health-care delivery of this sort. It should be noted, however, that while it is possible to expect the same kind of positive performance in a system developed in similar circumstances, it is also probable that the same kind of limitations will be found unless the causes of those limitations are removed. The radio system that now exists for Village Alaska assists with health-care problems that have existed there for years, but it also assists with problems arising from the coming of the white culture from the South. Wherever cultural contact is inevitable, creative means must be found to effect the equally inevitable -- and sometimes overriding -- side-effects. Radio by satellite which backs locally based health-care centers continually to upgrade the training of local personnel seems to be one example.

3.7 Further Potential of Interactive Radio in Village Alaska

Within the context of this situation of the growing awareness by the Natives of their problems and their increasing organization both for economic and social purposes, what further role can interactive radio play in the field of health care and education of the health-care personnel?

The potential of interactive radio can be increased both in terms of direct effects on health-care and training of its providers and also in terms of indirect effects on the health level of the population.

For this system to achieve a maximum of efficiency and benefit there should be a simultaneous supply of health care and health education. This health education should include training both for the health personnel and also for the population about disease prevention, care, and cure. The physician must be trained to be a consultant and a teacher at-a-distance. The teleconsultation must be used, if possible, to teach the patient about his problem. The network can be used for a carefully planned formal continuing education of the aides, supported by visiting teachers, printed material, and short stays at the hospital. The upgrading of the training personnel must be parallel to the introduction of technology.

Mental health care, family-to-patient-at-hospital communication, and patient awareness and control are areas in which improvement in the interactive radio operation in this matter can be proposed.

Mental Health Care. Mental disorders have been one of the categories of problems that have had major increases among the Native population. Radio interviews with psychological counselors and doctors are possible. Another possible approach would be family group discussions with the remote psychotherapist. For this approach all that is required, besides the trained personnel, is a small private room and technical devices to preserve the privacy. Another possibility is to train the health aides to perform primary mental health care and to consult with the specialist at the hospital about these cases, as they do about the physical problems.

The teleconference character of the radio network could allow for general discussions about specific mental health problems and ways of facing them. The discussions could include the participation of specialists, health aides, community leaders, and interested villagers.

Family-patient Communication. The contact between the patient at the hospital and his family in the village can be beneficial for his process of cure and recovery, as well as for the family's peace of mind. Regular periods of time can be allocated for exchange of this type of message.

Patient Awareness and Control over his Health Process. Reduction of pain and quicker improvement and recovery seem to increase by encouragement and better information to the patient about the process of his disease (Egbert, 1964). Mechanic (1972) comments in this respect:

> Another aspect of the same problem (information to the patient) concerns the inducements and encouragements provided by health workers and health institutions that facilitate patient activity and motivation for mastering their problems...The relationships between a health worker and patient can serve as a powerful instrument to facilitate or retard the patient's social functioning, his sense of potency and potential, and his willingness to struggle against the illness.

Instruction and encouragement can be given directly to the patient over the radio or through specific indications to the health aide with that purpose.

Interactive Problem-oriented Educational Program. The interaction between doctor and aide tends to be of a prescriptive mode. The aide explains what she perceives, the doctor asks about specific symptoms and data about the case and how she is dealing with it, and then the doctor prescribes and/or corrects. It is possible to propose another mode that will be more learning-oriented. It will be both in terms of the analysis of the diagnoses and the management plan done by the aide. In the short term, this approach will be more time-consuming but, if its effects are as expected, it can improve the ability of the health aide and therefore it might reduce the need for consultation about a good number of cases. It will also improve the overall training level and, as the exchanges can be heard by all other medical aides, the discussion can also benefit them. This will require a special training for the doctors because their work will include teaching as well as diagnosis and advice. And, as was mentioned previously, this increased information to the aide can also be transferred to the patient with beneficial effects on the outcome of the case.

Health Level of the Population and Interactive Radio. Health education and discussions, rediscovery and reevaluation of folk hygiene and of curative practices and knowledge, training programs and the use of communication to maximize native control over the services--these are steps likely to improve directly or indirectly the overall level of Native Alaskans' health-individual and social, mental and physiological.

The existence of native organizations and corporations, fueled by a renewal of their pride, awareness of the roots of the deterioration of their life, and the availability of funds from the Land Claims Act indemnity, make it much more feasible to implement plans in these directions. These organizations can maximize both the use of interactive radio for self-development and the well-being of the native people, and also can be an example for other societies undergoing similar conditions and struggles.

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CHAPTER XIV

TECHNICAL AND ECONOMIC CONSIDERATIONS IN PLANNING RADIO SERVICES

Edwin B. Parker and Bruce B. Lusignan

SUMMARY

Radio planners are urged to consider technical and institutional structure choices as well as choices of radio program content. A statement of technical requirements should be prepared, sometimes in several iterations after obtaining detailed cost figures associated with earlier iterations of the requirements statement. Technical and cost information should be obtained from sources independent of the suppliers of the equipment and services.

The major system choices include modulation techniques, frequency, size of local transmission area, and the extent to which facilities are shared (e.g., with telephone service). The economic necessity of shared use of facilities may lead to institutional frustration.

The cost of radio transmitters range from $10,000 for a small local transmitter and tower to more than $100,000 for more powerful regional transmitters. The technical options for network interconnection and tradeoffs between networking and local broadcasting costs are complex and depend on factors specific to each local situation. Some of the analyses are best done by computer, provided that the planner first analyzes the specific issues well enough to specify which issues need more detailed computer analysis.

The technology available for distribution of radio signals is varied and changing. Planners now face technical choices that did not exist a few years ago. The cost of electronics is declining, despite inflation, so that older technologies and cost estimates may be inappropriate in the light of more recent technical advances or cost reductions. The appropriate technical choices in any particular situation will, of course, depend on the goals of the radio service being planned, on the geography and population distribution in the locations to be served, and on the telecommunications system previously installed or planned concurrently with the radio services. This chapter is intended to explain the various technical and economic considerations that should be taken into account when planning radio services for development.

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1. TECHNOLOGY, INSTITUTIONS AND CONTENT

People planning radio services are usually primarily concerned with the content of radio programs and the effects on audiences of those radio messages. Will the educational content teach effectively? Will the general audience programs motivate people to undertake development tasks? It is natural and understandable that people who have the interests and prior training that lead them to ask such questions tend not to concern themselves with the underlying technology or the organizational structure of the institutions with responsibility for using the technology. People within the existing institutions may feel powerless to change the organizational structure, or (if they are highly placed within the institutions) have no motivation to change it. People without technical knowledge may take the familiar form of the technology for granted, leaving to the engineers and their institutional managers all the technical decisions associated with radio planning.

Despite these familiar and understandable tendencies, it would be a major error in development planning to assume that the technology and institutions are fixed and that the only real choices concern content. That might be true only if the technology were fully installed throughout the area under development, and if the institutions operating and using the technology had developed a bureaucratic inertia that could not be budged.

The major premise of this volume is that radio projects can be planned to support the development of the people in a particular country or region, or to provide education in support of development. Given that goal of human development, it should be recognized that the institutional structures largely determine, or place severe restraints on, the kinds of messages produced and distributed by those institutions. It should also be recognized that the form of the technology may largely determine or constrain the institutonal structures. For example, the technology may consist of a single high-power radio station broadcasting to an entire region (or a single master station with program origination capability and a number of slave stations without local program origination capability). That technical structure demands a centralized institutional structure for its programming and management. A different technical plan might lead to an independent low-powered community radio transmitter within each village or town. The institutional structure would be decentralized, with local community control. Each of the other possible forms of the technology will determine or constrain the associated institutional structure. The resulting institutional structure will largely determine the message content of the system.

When the technical planning of a system is left to the engineers as a "merely technical" problem, then the motivation and values of the engineers and the institutions directing their work will be the

major determinant of the social outcomes. Some of the previously existing institutions of the society may control the planning of the technology, with the effect of protecting or increasing their political or economic power. If the goal of development requires institutional reform, then leaving the technical planning to existing institutions may be self-defeating. Because technology has such a powerful influence over institutional structures, those people concerned with institutional reform should focus their attention on the planning of technological change. One of the few conditions under which the inertia of an established institution can be overcome is when new technology is being introduced. In the case of communication technology and communication institutions the opportunity for reform is particularly critical because of the effect on other institutions that are dependent on communication capability; for example, a strongly centralized communication system may inhibit other development activities that depend on local communication capability.

This interaction between technical planning and institutional control is a severe problem for most planners of educational or developmental radio projects. The organization planning the radio services is unlikely to be the same organization that controls the microwave or other long-distance general purpose communication facilities of the country or region. Except in very small countries where a single radio transmitter can cover the entire country, long-distance interconnection of different transmitters is usually desired, so that some programs can be shared more widely. Otherwise the costs of program production might be prohibitive or some use of long-distance facilities needed to interconnect radio transmitters. Usually, this results in the radio planners being dependent on the telephone or telecommunications authority in their country or region. Even when the needed long-distance interconnection facilities do not exist, the technical and economic advantages of sharing facilities between telephone and radio distribution services can usually be used by telecommunications authorities to prevent those charged with radio development from developing independent long distance facilities. This technical and economic advantage of shared facilities may require that radio planners, in order to meet their objectives, must also plan technical systems suitable for telephone as well as radio. Alternatively, they may become totally dependent on the technology and implementation schedules planned with telephone requirements in mind, without adequate consideration of radio requirements.

2. STATEMENT OF TECHNICAL REQUIREMENTS

Because of the powerful interconnection among technology, institutions, and messages, it is essential to begin the technical planning activity with a clear statement of the goals of development (or of education in support of development), so that the technical system

can be designed to meet those goals. An extended discussion of the goals of development and of communication in support of development is provided elsewhere (Parker, 1976).

Starting from a clear sense of the goals of the radio system to be planned in support of education and development, project planners should prepare a first draft statement of technical requirements. Such a document is not a technical document. Rather, it should describe the non-technical functions and services that the technical system must be designed to provide. For example, a statement of requirements might include the number of channels required, the minimum level of signal quality, and the points of origination and reception. Such a statement of technical requirements must be prepared by the planners or managers of the overall project, otherwise the goals and preferences of the engineers, and their managers, are almost certain to take the project in a different direction, for the reasons indicated above.

In planning radio for education and development, the technical requirements of three different types of services should be considered: formal education (in-school broadcasts), non-formal instruction (instruction aimed at out-of-school audiences), and regional and local community development broadcasts (local-access radio). The first two types are discussed extensively in other chapters in this volume. Local-access radio is singled out for additional discussion here because it has different technical requirements that should be taken into account in the technical system planning. The first two types sometimes may be served adequately by national or regional programs covering an extended region.

Community development or local-access radio permits local communities to participate in the production as well as reception of radio programs or to use the broadcast facilities for local community announcements. If the purpose of development is to stimulate the effective mobilization of brainpower and labor power of a society, then those goals should be reflected in the production process as well as in the messages of development media. Messages from central authority on a national network urging local initiative may be less effective than facilitation and demonstration of local initiative within the medium thereby providing highly visible models for other development projects and a local forum through which other projects can be discussed and implemented. A more extensive discussion of the role of media in this type of development strategy is available elsewhere (Parker, 1976).

This direct financial outlay required to provide community access radio may be quite small if local communities provide the labor for program production. A local repeater station normally carrying national or regional radio programs can be technically designed to also permit local programming at very low incremental cost. For example, a local microphone or audio cassette recorder can be substituted as an input signal to the repeater via a local switch, at a scheduled time

each day (or in case of local emergency). Low cost local studio equipment might be a desirable addition in some cases. For a more detailed discussion of the uses of this type of radio for development, see the case study report on community access radio elsewhere in this volume (Hudson, 1976).

Utilization and audience feedback needs should also be specified in the technical requirements statement. The key to success in development projects using communication media usually lies in the effectiveness of the utilization and feedback programs. Messages sent out over the air without effective communication back to the program producers are likely to be much less successful than messages that are integrated into a local utilization program and are modified on the basis of good audience feedback data (Spain, 1973; Schramm, 1969). Reliable voice contact by telephone or two-way radio with each community to be served by the radio project may be necessary to provide the needed coordination and feedback. In locations with previously existing telephone or two-way radio facilities, the broadcast radio planners need not specify duplicate facilities. However, in many developing countries and regions, the radio planners will also need to provide feedback and utilization coordination facilities. Sometimes conference circuits linking all of the teachers in a region (or all of the health workers) in a shared conversation may have greater development potential than private two-party conversations or one-way broadcast transmissions (Hudson and Parker, 1973).

The requirements statement should include the list of communities or population settlements to be served, the size of populations involved, and their geographic locations. How to reach these communities with the desired services is the major problem to be resolved in the technical planning. The statement should include the requirements for national, regional, and local origination, as well as for reception capability. It should include the requirements for two-way voice communication or conference circuit capability connecting communities together within each region as well as connecting each receiving community (or school) with the main origination centers. For a more general discussion of telecommunication requirements for rural development, see Hudson and Parker (1975).

The initial statement of technical requirements will quite likely need to be revised in a later iteration (or iterations). These requirements are seldom based on absolute needs that must be fulfilled no matter how high the price. Some of the facilities that are desired may prove to require more funds than can be obtained. Some of the geographic locations where service is desired may prove inordinately expensive to reach. Budgets are seldom unlimited, and cost constraints must be taken into account. Nevertheless, it would be a serious error to begin with a restricted statement of technical requirements in the first iteration, because such compromised requirements statements include implicit assumptions about the technology and costs that may in

fact be false in the light of new technological options. For example, communication satellite technology might make possible 100 percent coverage of a rural population at costs comparable to terrestrial facilities covering 75 percent, even though coverage of the first 50 percent may be cheaper through terrestrial facilities. At a time of rapid technical advances, it is therefore important to specify first the ideal requirements; revisions may be made later based on current technical and cost information, rather than on some implicit assumptions rooted in older technologies and outdated cost experience.

3. EXISTING FACILITIES AND CONSTRAINTS

Technical planning of radio and other telecommunications services does not usually start with a complete absence of pre-existing facilities, such that the technical planners can begin their work with only the technical requirements' statement at hand. There are usually some pre-existing radio, telephone, or microwave facilities in the region to be served. The technical planning problem is not how to start over from the beginning; rather, it is how to plan a transition from the existing state to one in which all requirements are met.

Geographic constraints such as mountainous terrain that will block or interfere with radio transmissions need to be taken into account, as do potential atmospheric disturbances (e.g., by the Aurora Borealis in northern latitudes) and constraints on the radio frequencies that have been allocated for use within the region.

Once a complete statement of requirements, existing facilities, and constraints is prepared, planners can proceed with the analysis required to prepare a technical plan with associated cost estimates.

4. INSTITUTIONAL RELATIONS BETWEEN PLANNERS AND SUPPLIERS

The people and institutions with responsibility for radio planning seldom have within their organizations all the technical capability necessary to plan and to supply the technology. Even the most technically capable staff (perhaps especially the most technically capable staff) will want to draw on sources of technical information outside the institution responsible for developing radio services, in order to obtain and evaluate current technical and cost information.

If the organization planning the radio services does not have staff highly qualified in all aspects of the technological choices to be considered, it will be important to obtain technical and cost information from qualified sources other than the suppliers of the technology.

Information from suppliers of the technology, even in competitive situations with multiple sources of supply, should be suspect because the suppliers have a vested interest different from those purchasing the technology or services. Competitive bidding procedures in procurement of equipment may help keep the costs low once the technical specifications are complete, but even competitive suppliers may have a common interest in recommending technical specifications that will require larger total expenditures.

A difficult situation occurs when there is a monopoly supplier of needed technology (for example, if the radio organization has no choice but to deal with a monopoly telephone company or agency for its long-distance communication). Dependency on a monopoly with interests that necessarily differ from those concerned with radio development would be even worse if the funds for planning and supplying the technology are given directly to the monopoly supplier. The radio organization must at least be able to withhold funds if it is to have any control over the technical requirements and plans. If the institution or agency from which the technology will be procured is unsuccessful in directly imposing its view of technical requirements on the radio planners, it may try to insist on a one-time specification of technical requirements and then present a composite cost estimate for meeting the entire package of requirements. This approach would make it impossible for the radio planners to learn the specific cost information that they need to make the careful judgments concerning how much they are willing or able to pay for each of the requirements and to revise their specifications accordingly. When a monopoly supplier of services or technology is involved, it is particularly important to have independent sources of technical and cost information against which to evaluate and compare the technical and cost proposals of the monopoly supplier.

Radio planners need not necessarily understand all of the engineering and scientific principles underlying the technology, but they must learn enough about the technical alternatives and costs to be able to make the planning decisions. Otherwise, people with differing goals may be making the key decisions that have a major influence on the social outcome.

5. MAJOR SUB-SYSTEMS AND SYSTEM CHOICES

In designing technical systems to meet the requirements at the lowest cost or within cost constraints, three major sub-systems need to be carefully analyzed. They are the receiving system, the local broadcast transmission system, and the point-to-point network in interconnection system. The last system may require two-way transmission capability. Different technical designs will allocate different proportions of the total cost to these three sub-systems. In general, the objective of the overall technical plan should usually be to minimize

the cost of the radio receivers. The lower the cost of the receivers, the more people will be able to acquire them and the more extensive the coverage of the system. Given the very large number of receivers relative to the number of transmitters, a small difference in the per unit cost of the receivers can make a significant difference to the total system cost.

In cases where radio service is to be provided to previously unserved areas, planning for the supply of radio receivers may be particularly difficult. In a country like Nepal, for example, supplying batteries for transistor radios may present such a major logistics problem that in selecting radio receivers greater emphasis would need to be placed on low power utilization, and in selecting batteries, greater emphasis placed on both length of storage without deterioration, and length of service while in use.

In cases where radio receivers are already widely available in the communities to be served, then the existing receiver design must be accepted as already fixed and is thus a technical constraint to which the other sub-systems must be adapted.

Four major choices need to be made in overall system planning. These four choices are not independent; decisions in one area will interact with the others. These four choices are: choice of modulation technique, choice of frequency, size of local transmission (reception) area, and the extent to which facilities will be shared with other uses besides radio services.

5.1 Choice of modulation and frequency

By historical convention, the use of FM (frequency modulation) has been restricted to the radio spectrum in the approximately 88 to 108 MHz band. This modulation technique permits a higher quality (noise-free) signal to be received with less transmitted power and is used extensively in the more industrialized countries for music and stereophonic programming. Because of the choice of frequencies and higher audio performance, FM receivers tend to be from 25% to 50% more expensive than typical AM radios. In addition, the choice of the frequency band limits useful reception to line-of-sight. With average terrain, a typical FM transmitter may cover only a 15-to-30 kilometer radius. Like television, which uses similar frequencies, many transmitters have to be used to obtain full coverage of a typical country. This is a disadvantage if the same programs are intended for all locations. It is an advantage if local program selection is required since stations in different locations will not interfere with each other; the frequencies can be reused again and again in the nation.

The most used radio frequencies are 535-1605 kHz where AM (amplitude modulation) is chosen. At these lower frequencies the radio signals are fairly effectively guided by the earth and upper atmosphere

and give reasonable signals even when the radio receiver is blocked from the transmitter by local terrain. The range of effective signal strength depends on the antenna height and transmitter power. The most powerful transmitters can give fairly good signals over an 800 kilometer radius even with moderately rugged terrain. In this radio band most countries can be effectively covered with a relatively small number of high power transmitters. Lower power transmitters can also be used to give medium range coverage for local broadcasts despite terrain obstacles.

The "short wave" band, 5 to 30 MHz, also typically is used in AM broadcasting. This band, however, has radio propagation characteristics that distinguish it from the lower AM band. At these frequencies there is relatively little guidance of the signals along the earth. But for relatively low angles the earth's ionosphere (the ionized portion of the upper atmosphere) will bounce the radio waves back to the earth with little loss of signal strength (in fact, under some conditions the signals can be enhanced). Useful strength signals can, under some conditions, bounce between ionosphere and earth several times before being received thousands of miles away. Because of this phenomenon, the short wave bands have the greatest area coverage, but they also have some important drawbacks. First, because the ionosphere varies with time, the area coverage and quality of the signals changes with time, often unpredictably. Second, because the signals can go so far, they cover many other countries besides the originating country. This causes both technical interference problems and political (content-related) problems. And, third, while coverage can be good at a great distance, there is an intermediate distance with a real problem. This distance, around 50 to 100 kilometers (the skip distance) is the area where radio rays, instead of bouncing from the ionosphere back to earth, encounter the ionosphere so sharply that they pass through it to outer space Thus, there is a ring around the transmitter with very poor reception.

The choice of modulation type and frequency band will depend on the particular application. Most applications, however, would tend to choose the AM band (the 535 to 1,605 kHz) region. In this band, choice of power level can be used to control between medium and large area coverage without serious terrain blockage. In addition, the radio receivers in this band are least costly. Most applications would probably not go to the FM band (88 to 108 MHz) unless very high quality signals were required, or unless the frequencies were fully used in the AM band and large amounts of locally selected programming were needed.

5.2 Size of local transmission area

The size of local transmission area in the AM band is largely dependent on the height of the transmitter tower and the power of the transmitter. In the trade-off analysis comprising costs of local transmission with network interconnection costs, lower overall system costs may sometimes be obtained by having a larger number of relatively

cheap local transmitters than a smaller number of expensive regional transmitters requiring taller towers and more transmitter power. The cheaper the costs of network interconnection, the more likely it will be that the most economical solution will be a larger number of lower-powered local transmitters. In the case of network interconnection via communication satellite, the incremental costs of interconnecting an additional transmitter may be extremely small. If the radio signal is transmitted by satellite between any pair of points, the cost of adding each additional reception point is independent of distance, does not require any additional costs for "uplink" transmission to the satellite, and does not use any additional satellite capacity. Each site need only supply the satellite capacity. Each site need only supply the satellite reception equipment needed to receive the signal that will be fed into the local broadcast transmitter. Where satellite reception capability already exists or is planned concurrently (for example, for television reception of telephone transmission capability), the incremental cost to receive the network radio signal for local retransmission may be negligible.

A small local transmission area may be called for in the technical requirements in order to meet the development goal of permitting, at least part of the time, the transmission of messages within a local community of interest. Even though most of the time the transmitter may be retransmitting the network signal, the potential for scheduled or occasional local transmission within a small community of interest may be a powerful development tool.

5.3 Shared use of facilities

The advantages of planning systems to take advantage of previously existing facilities is so self-evident that it may hardly be necessary to draw attention to it. A small transmitter tower on the top of a tall building or hill may be just as effective (and much cheaper) than a taller transmitter tower in a different location. Adding an additional transmitter for educational radio programs to a tower previously constructed for transmission of radio or television for entertainment purposes is cheaper than duplicating the tower. Utilizing previously existing microwave facilities available primarily for telephone or television transmission is a cheaper way to obtain network interconnection than duplicating such facilities.

Perhaps not so obviously, this cost advantage of shared use of facilities may apply even more strongly when the facilities are not yet constructed. Joint planning of network facilities for telephone, radio, and possibly television services, can lead to dramatically lower costs for radio distribution than can be obtained through facilities dedicated for radio. The contribution of the cost share involved in the radio service may also lower the average costs for telephone and other telecommunications services. Joint planning of telecommunications

services also reduces the costs for each service because the requirements for all the services can be taken into account in the initial system design, without requiring a sometimes expensive retrofitting of facilities originally designed for one function to make them work effectively for another function. (An example of this would be provision for wider frequency bandwidth for radio circuits so that signal quality is greater than in standard telephone circuits).

In the context of radio planning, the advantages of planning the network interconnection facilities concurrently with telephone facilities each local or regional transmitter. The two-way communication required for coordination of utilization activities and for effective feedback channels are even more obviously related to telephone planning. It would be highly wasteful of development dollars to install two-way voice communication capability solely for radio use, without making that capability generally available for the variety of other uses that also will contribute greatly to development goals.

Even in those cases where it is decided that radio service should be provided in advance of telephone and other telecommunications services, it would be a serious mistake in technical planning not to take into account the later requirements of other services. The facilities initially installed should become the first building blocks in an integrated system plan. Much of the development advantage of those initial components of a larger telecommunications system will be lost if they are simply installed to perform a single function and cannot easily be expanded to serve other functions as needs arise and funds become available.

National and international bureaucracies concerned with the development of radio or the development of educational services may have little incentive to undertake the joint planning of general purpose telecommunications facilities because much of it lies outside their assigned mission. Their attempts to participate in joint planning may be rebuffed by the agencies concerned with provision of telephone service that do not want to give up any of their monopoly power by sharing plans and decisions.

Many examples could be given of lack of cooperation between education or broadcasting authorities and national telecommunications administrations. The situation that existed in 1975 between different divisions of a major international lending agency was typical of the relationship between telecommunications planners and educational radio planners the world over. At that time, the officially stated general policy of this agency was to give priority to development plans that would benefit the least well-off 40 percent of the population in developing countries - in other words, the rural poor. In attempting to implement that policy the education division was exploring the use of radio broadcasting and other telecommunication-based services to aid these rural populations. At the same time, the telecommunications

policy of this agency continued the standard world-wide telecommunications practice of not approving any loans for telecommunications development unless the projects could show a comercially competitive rate of return on the investment in a reasonably short period of time. The implementation of that conventional policy had the not-surprising effect of directing most telecommunications activities in developing countries into expansion of urban telephone service.

It would be surprising to find a different policy, because the traditional telecommunications wisdom, both in advice-giving more-developed countries and advice-receiving less-developed countries, is to develop telecommunications slowly and incrementally, usually with lower priority than is given to the development of roads, railroads, and electrification projects. Since telephone service is in such great demand that growth can be financed out of past revenues or commercial loans that have solid prospects of near-term repayment out of future revenues, there is a natural tendency to let telecommunications development continue on a self-financing basis. In the opinion of the present authors, that conventional policy has the effect of rendering ineffectual the more highly publicized policy of supporting plans to aid the rural poor. In our opinion, effective mobilization of the rural poor to develop rural areas and improve the quality of rural lives will require the development of a telecommunications infrastructure permitting radio and telephone (or telephone-like) services. Such capability should be given development priority over even roads and electrification, because effective communication may permit mobilization of people to build the roads, or whatever else is necessary for improvement of their lives. (New communication technologies are less dependent on roads and electricity than earlier technologies were.) Without effective communication, the brain power and labor power of the rural poor will remain locked into the inertia of traditional ways of life. To delay telecommunictions development until enough other development has taken place to make telecommunications profitable may be the way to doom the rural poor to stay locked in the vicious cycle of poverty. Radio planners may find that they must challenge and change the assumptions of telephone planners in order to accomplish their goals. Otherwise, the powerful economic logic of shared use of facilities may leave radio planners waiting for telephone planners, who are in turn waiting for developments that will make rural telephones profitable, a situation that probably cannot occur without the communication services their policies may be blocking.

6. TECHNICAL OPTIONS FOR DIRECT RADIO DISTRIBUTION

A major technical system design consideration is the trade-off between networking costs and direct distribution costs. In order to understand those choices better, it is necessary first to consider the technical choices and costs of direct distribution of radio signals to

receiving sets without requiring additional transmitters. In the case of a small country or region with particularly favorable geography and allocation of radio frequencies, it is possible that a single transmitter could provide coverage of the entire country or region. This would constitute the limiting case in the trade-off analysis in which all of the costs are allocated to direct distribution and none to networking. In most cases, some combination of direct distribution and networking costs will be required. (Networking costs are those required to interconnect the transmitters so they can share common programs).

The four major technical options that could be considered, in principle, for direct distribution of radio signals to receivers are cable, terrestrial transmitters, tethered balloons, and communication satellites. At this time, terrestrial transmitters seem to be the only appropriate economic choice for most conditions. Closed circuit or cabled radio transmission may have a place for interconnection of schools within urban areas. It may also be useful and economical in highly developed urban areas where additional audio channels can be used on cable television systems installed primarily for distribution of television signals. Cable transmission has the advantages of not requiring use of limited over-the-air frequency allocations and of permitting private interconnection of only those points where connection is desired. Even in locations where most listening locations have telephones, broadcast transmission is likely to be more economical than transmission through existing local telephone wires or cables. For most radio applications in developing countries or regions, one of the forms of over-the-air broadcasting will certainly be preferable to cable transmission.

Radio broadcasts from tethered balloons or from communication satellites in principle could be considered merely variations of terrestrial transmitters located on much taller antenna towers. In practice, extending the tower height to thousands of meters (as in tethered balloon applications) or to 39,800 kilometers (as in the communication satellite application) requires additional considerations with respect to clearance of frequencies and power of transmitter required to cover the larger areas involved. Direct broadcast of radio to individual receivers from communication satellites is unlikely to be a viable alternative in the foreseeable future, partly for technical and partly for international political considerations. The International Telecommunications Union (ITU) does not permit broadcast from satellites on frequencies that could be received by existing radio receivers because such broadcasts would cause interference with existing terrestrial facilities. No one seriously believes that it is even technically possible to build radio receivers to receive radio signals transmitted on frequencies allocated for use by satellites at costs comparable to the costs of radios that receive frequencies assigned for terrestrial transmission. In addition, the much higher power required for satellite transmission into individual radio receivers would make that an unlikely system choice. In any case, international political objections to the

potential of satellite transmission for direct broadcasting across international boundaries are likely to prevail, especially since there are no technical or economic considerations likely to create the pressure to override these political objections. Communiction satellites may play an important role in radio broadcast system planning because of their advantages for network interconnection, but they cannot be seriously considered for the direct broadcast or local distribution function.

Tethered balloons are unlikely to obviate the need for network interconnection except in the very smallest of countries. In the case of Iran, it was calculated that twelve balloons would be required to achieve national coverage (NIRT, 1975). Even such a plan would not be technically feasible for Iran because of the apparent impossibility of siting twelve balloons in locations that would achieve the desired national coverage without creating any aircraft hazards. The costs of balloon systems are such that they are more likely to be reasonable choices for television transmission than for radio transmission. If tethered balloons are selected for television transmission, then it would be important for radio planners to consider carefully the costs of adding radio transmission capability. Tethered balloons have been produced by the Westinghouse Corporation, Baltimore, Maryland, for use in Iran and Korea. The price for a single balloon in 1975 was one million dollars (1975). AM radio transmitter systems range in price from a minimum of $10,000 for a one-watt amplifier on a 10-meter tower to over $100,000 for a one-kilowatt transmitter and a 100-meter tower. The coverage range for the small transmitter is on the order of 10-20 kilometers, while the large station could achieve a coverage range of 200 kilometers. It is difficult to generalize about the merits of small or large stations and the network tradeoff costs because the terrain conditions are so important in assessing the networking costs.

If local programming is not a requirement, national coverage is a priority, and the population is relatively evenly distributed over a relatively flat terrain, then even without taking networking costs into account, a small number of large transmitters would be preferred. One large transmitter costing $100,000 covering a 200 kilometer radius would be cheaper than a number of $10,000 transmitters, each with a radius of 20 kilometers because many more than 10 such small transmitters would be required. On the other hand, if local programming is a requirement, if the population is concentrated in cities, towns, and villages with uninhabited areas in between, or if mountainous terrain reduces the range of the large transmitter, then separate transmitters may be required for each city, town, remote village, or mountain valley. If all of the population within a circle with a 200 kilometer radius were concentrated in five population centers, then five local stations would be cheaper than one regional station.

7. TECHNICAL OPTIONS FOR NETWORK INTERCONNECTION

The fact that the costs of programming are often greater than distribution and transmission costs may lead to a networking requirement, merely to share program production costs: or national policy news that might help foster a sense of national unity. At the same time, local and regional programming may be required for effective development, especially if local languages are involved. Therefore, an economically optimal technology may not meet social policy requirements for both localness and national interconnection. These considerations should lead to the explicit policy decisions by radio planners rather than passive acceptance of the results of technical and cost analysis.

A basic networking requirement is to provide two-way voice communication of a quality that is also reasonable for music, to interconnect all of the local transmitters required to achieve complete coverage of the population in the country or region to be served. That interconnection system should be flexible enough so that any one of the local transmitters could be the origination point for the entire system, on occasions when that is desirable. It should be flexible enough that the network can be re-configured easily into regional sub-networks so that there can be multiple concurrent radio signals, even though each local transmitter will be utilizing only one of them. It should be flexible enough to permit network expansion on the basis of need. In other words, it should be easy to add additional local transmitters or to move the location of transmitters without significant disruption of the network. Since not all local transmitters can be implemented simultaneously, it may be important that the network can expand by adding additional local sites in order of priority of needs, not merely on the basis of proximity to previously existing networking nodes.

Two-way communication with each location may be essential from the point of view of system operation and maintenance even for sites that are never used for remote origination. Without the feedback that is possible through the return communication channel it would be very difficult to locate and repair (or even know about) technical failures in the communication network. As was indicated earlier, this two-way networking requirement for radio distribution, especially when coupled with the programmatic need for coordination and feedback activities associated with the program content, makes the networking requirement quite similar to that of long-distance telephony. The costs and benefits of such systems are such that it would be quite unreasonable to plan long-distance telephone systems without radio capability or vice versa.

The main technical options for network interconnection are microwave and communication satellite.

It is very difficult to provide accurate cost comparisons on a generalized basis for microwave and satellite systems. Some relative comparisons are possible, however. When the distance to be covered is less than 40 to 60 kilometers, and when the number of circuits is less than 25, cable systems may be preferable to microwave systems. This again depends very strongly on the terrain. Within these limits over the air direct broadcasting is likely to be cheaper than either cable or microwave. Above these two limits, microwave systems are generally less expensive (Ellis, 1975-1976). For very large capacity requirements, such as for hundreds of circuits, other new technologies such as waveguide or optical fibers may become more attractive.

Both cable and microwave systems have serious drawbacks in providing interconnection for distribution. These systems must be connected in a linear manner, going from point to point. Further, the installation rate for providing service throughout a given country is extremely dependent on the terrain, and to a lesser extent on the transportation services available within the country. On the other hand, a satellite distribution system permits multipoint-to-multipoint interconnection without regard to any particular linear path. Thus, service can be provided to any specific group of locations at any time in an expansion program. This feature means that growth of service can be tied to development plans for specific areas without the additional time constraints of having to wait for the cable or microwave systems, and channels can be added to those existing ground stations which need them when they need them. They need not be added to every station, as is necessary in the linear cable or microwave system. The satellite cost per radio circuit in a fully utilized domestic satelite system is estimated at $1,200 per year (Lusignan, et al, 1975).

Networking for interconnection of radio stations may use telephone facilities where they exist, or share use of cable or microwave facilities with telephone services. To interconnect locations that do not have telephone service using links dedicated for radio may be economically unfeasible by terrestrial means. Even when new network facilities for radio are planned jointly with telephony expansion the costs to reach small or remote communities may be completely prohibitive. For this reason, most countries may settle for reaching only 75%, 85%, or 90% of their population, even though the first 50% or 75% may be cheaper to reach through terrestrial links, many of which are already in place. The trade-off analyses are complicated and are best done by computer programs that accept as input parameters the specific geographic and population distribution factors of the region to be served as well as the objectives specified by the planners.

A demonstration of a radio distribution system via satellite was held in March, 1975 in Washington, D.C. by the National Public Radio Corporation. Using a Western Union satellite, high quality stereo programming was transmitted from Valley Forge, Pennsylvania to Washington, D.C. This type of service is not available terrestrially in the

U.S. because the present telephone system has a limited bandwidth of 3.4 kHz. In a satellite system, there is no inherent bandwidth restriction, and so a point-to-multipoint distribution system could provide any service desired, without upsetting telephony service. For monophonic systems with AM-broadcast quality service requirements, the per unit cost for a complete audio receive-only dedicated ground-station could be less than $5000, when used in conjunction with a properly designed satellite system. (Lower costs could be achieved through shared use of satellite ground stations.)

Comparable networking costs for terrestrial microwave systems cannot be specified because they are a function of the number of channels and of distances (the smaller the number of channels and the longer the distance, the higher the cost). Because of the large economies to be gained from sharing facilities with telephony (or the near prohibitive costs without such sharing), the radio networking costs become a function of long-distance telephony costs.

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